West Seattle and Ballard
Link Extensions

Level 1 Alternatives Development and Screening

July 2018

SOUNDTRANSIT

Summary

Introduction

The *Level 1 Alternatives Development and Screening Technical Memorandum* describes the initial alternatives developed for the West Seattle and Ballard Link Extension (WSBLE) Project and documents the findings and recommendations of the Level 1 Screening process.

Preliminary Purpose and Need

The purpose of the WSBLE Project is to expand the Link light rail system from downtown Seattle to West Seattle and Ballard and to increase capacity and connectivity for regional connections.

Alternatives Development Process

The development, evaluation and screening of the Level 1 alternatives were conducted through a collaborative process in accordance with the *Alternatives Evaluation Framework and Methodology Technical Memorandum* (Sound Transit 2018a). As part of this collaboration, Sound Transit conducted an early scoping period between February 2 and March 5, 2018 to provide agencies, tribes, and the public an opportunity to comment on the WSBLE Project. The ST3 Representative Project served as the starting point for this dialogue, and stakeholders were invited to offer their suggestions on possible alternatives. The alternatives defined in the Level 1 Screening were a direct result of the input received during the early scoping period.

Level 1 Alternatives Evaluation and Findings

Level 1 relied on readily available information, with a high-level assessment of a wide range of alternatives within each study segment—West Seattle/Duwamish, South of Downtown (SODO), Downtown and Interbay/Ballard. A total of 24 alternatives were studied in Level 1 at a segment level, with four additional alternatives for the International District/Chinatown Station in the Downtown Segment. The ST3 Representative Project served as the baseline alternative against which alternatives were compared during the Level 1 Screening. The Level 1 evaluation applied primarily qualitative criteria to measure the potential benefits and impacts and highlight differentiating characteristics among the alternatives relative to the ST3 Representative Project. The Level 1 Screening was structured to identify those alternatives that demonstrated the most promise, and to screen out those alternatives that had limited potential to meet the WSBLE Project's preliminary Purpose and Need and/or were deemed not practical.

Summary of Level 1 Screening Recommendations

Table S-1 (Summary of Elected Leadership Group Level 1 Screening Recommendations) lists the alternatives that the Elected Leadership Group (ELG) recommended be carried forward into the Level 2 Screening, as well as the alternatives not carried forward into Level 2. On May 17, 2018, the ELG recommended to carry forward 16 of the Level 1 alternatives into Level 2. On July 19, 2018, the ELG recommended to advance four additional alternatives into Level 2 for the SODO Segment and Chinatown/International District Station in the Downtown Segment.

Next Steps

As a next step, the Level 2 Screening will develop and evaluate in greater detail the 20 alternatives carried forward from the Level 1 Screening. However, the Level 2 evaluation will employ a larger set of criteria and more use of quantitative measures. Like Level 1, the Level 2 Screening will be conducted at the segment level.

Table S-1 Summary of Elected Leadership Group Level 1 Screening Recommendations

Segment / Level 1 Alternative	Carry Forward into Level 2	Do Not Carry Forward into Level 2
West Seattle/Duwamish Segment		
ST3 Representative Project (South of West Seattle Bridge)	✓	
Pigeon Ridge/West Seattle Tunnel	✓	
West Seattle Bridge/Fauntleroy		✓
Yancy Street/West Seattle Tunnel		✓
Oregon Street/Alaska Junction	✓	
West Seattle Golf Course/Alaska Junction	✓	
SODO Segment		
ST3 Representative Project (Elevated E-3)	✓	
Massachusetts Tunnel Portal	✓	
Surface E-3	✓	
Occidental Avenue	✓	
6th Avenue		✓
Downtown Segment and International District/Chinatown Station		
ST3 Representative Project (5th/6th/Republican)	✓	
5th/Harrison	✓	
5th/Mercer		✓
6th/Boren/Roy	✓	
8th/6th/Republican		✓
5th/Roy/Consolidated SLU Station (1)		✓
5th Avenue Bored Tunnel/Mined Station	✓	
4th Avenue Cut-and-Cover Tunnel/Station	✓	
4th Avenue Bored Tunnel/Mined Station	✓	
Union Station Bored Tunnel/Mined Station		✓
Interbay/Ballard Segment		
ST3 Representative Project (Elliott/15th/Movable Bridge)	✓	
Elliott/15th/16th/Fixed Bridge	✓	
West of BNSF/20th/17th/Fixed Bridge (2)	✓	
West of BNSF/20th/17th/Tunnel	✓	
East of BNSF/14th/Movable Bridge	✓	
Elliott/Armory Way/14th/Tunnel	✓	
West of BNSF/20th/Tunnel		✓

NOTES: (1) SLU = South Lake Union; (2) BNSF = Burlington Northern Santa Fe

Table of Contents

1 INTRODUCTION 1
- 1.1 Overview 1
- 1.2 Purpose of Report 1
- 1.3 Report Organization 2

2 PRELIMINARY PURPOSE AND NEED 3
- 2.1 Project Purpose 3
- 2.2 Need for Proposed Action 3

3 ALTERNATIVES DEVELOPMENT PROCESS 4
- 3.1 Study Segments 5
- 3.2 Level 1 Screening Process 6
- 3.3 Agency and Community Engagement 8
- 3.4 Early Scoping Feedback 10

4 LEVEL 1 ALTERNATIVES EVALUATION AND FINDINGS 11
- 4.1 West Seattle/Duwamish Segment Alternatives Evaluation 12
- 4.2 SODO Segment Alternatives Evaluation 20
- 4.3 Downtown Segment Alternatives Evaluation 27
- 4.4 Interbay/Ballard Segment Alternatives Evaluation 43

5 SUMMARY OF LEVEL 1 SCREENING RECOMMENDATIONS 52
- 5.1 Alternatives Carried Forward into Level 2 52
- 5.2 Alternatives Not Carried Forward into Level 2 54

6 NEXT STEPS 56

7 REFERENCES 57
- 7.1 GIS Data References 57
- 7.2 Written Resources 57

Figures

Figure 1-1 West Seattle and Ballard Link Extensions Study Area 1
Figure 3-1 Alternatives Development Process 4
Figure 3-2 Study Segments for Alternatives Development Phase 5
Figure 3-3 Alternatives Screening Process 5
Figure 3-4 Development of Evaluation Criteria, Measures and Methods 6
Figure 3-5 Community Engagement and Collaboration Process 8
Figure 4-1 Level 1 Alternatives by Study Segment 11
Figure 4-2 West Seattle/Duwamish Segment—Level 1 Alternatives 12
Figure 4-3 SODO Segment—Level 1 Alternatives 20
Figure 4-4 Downtown Segment—Level 1 Alternatives 27
Figure 4-5 International District Chinatown Station in Downtown Segment—Level 1 Alternatives 34
Figure 4-6 Interbay/Ballard Segment—Level 1 Alternatives 43

Tables

Table S-1 Summary of Elected Leadership Group Level 1 Screening Recommendations ii
Table 2-1 Level 1 Screening Themes and Symbols 3
Table 3-1 Performance Rating Symbols 6
Table 3-2 Level 1 Screening Evaluation Criteria, Measures and Methods (by segment) 7
Table 4-1 West Seattle/Duwamish Segment ELG Screening Recommendations 19
Table 4-2 SODO Segment ELG Screening Recommendations 26
Table 4-3 Downtown Segment ELG Screening Recommendations 41
Table 4-4 International District/Chinatown Station ELG Screening Recommendations 42
Table 4-5 Interbay/Ballard Segment ELG Screening Recommendations 51
Table 5-1 Summary of Level 1 Alternatives Carried Forward into Level 2 52
Table 5-2 Summary of Level 1 Alternatives Not Carried Forward into Level 2 54

Appendices

Appendix A West Seattle/Duwamish Segment Level 1 Evaluation Matrices
Appendix B SODO Segment Level 1 Evaluation Matrices
Appendix C Downtown Segment and International District/Chinatown Station Level 1 Evaluation Matrices
Appendix D Interbay/Ballard Segment Level 1 Evaluation Matrices
Appendix E Stakeholder Advisory Group Meeting Summaries (4/24/18 and 7/16/18)
Appendix F Elected Leadership Group Meeting Summaries (5/17/18 and 7/19/18)

Acronyms and Abbreviations

BNSF	Burlington Northern Santa Fe
BRT	Bus Rapid Transit
CBD	Central Business District
CSO	Combined Sewer Overflow
DAHP	Department of Archaeology and Historic Preservation
DSTT	Downtown Seattle Transit Tunnel
ECA	Environmentally Critical Area
EIS	Environmental Impact Statement
ELG	Elected Leadership Group
FTA	Federal Transit Administration
HCT	High-Capacity Transit
IAG	Interagency Group
INS	Immigration and Naturalization Service
KCM	King County Metro Transit
LRT	Light Rail Transit
MIC	Manufacturing and Industrial Center
NRHP	National Register of Historic Places
NWSA	Northwest Seaport Alliance
OMF	Operations and Maintenance Facility
PSRC	Puget Sound Regional Council
ROW	Right-of-Way
SAG	Stakeholder Advisory Group
SCL	Seattle City Light
SLU	South Lake Union
SODO	South of Downtown
SR	State Route
ST3	Sound Transit 3
UPRR	Union Pacific Railroad
WSBLE	West Seattle and Ballard Link Extensions
WSDOT	Washington State Department of Transportation

1 INTRODUCTION

1.1 Overview

Sound Transit is advancing the West Seattle and Ballard Link Extensions (WSBLE) Project through the Alternatives Development phase. During Alternatives Development, Sound Transit is assessing the "representative project" included in the Sound Transit 3 (ST3) Plan, as well as other alternatives developed from refining the ST3 Representative Project route, station locations and other project elements based on additional public engagement and technical analysis. The ST3 Representative Project itself is the result of extensive, yearslong planning and public involvement work, including high-capacity transit (HCT) studies, the process to update the agency's long-range plan, and the work that developed the *ST3 Plan* that voters approved financing for in 2016. Sound Transit is engaging the public and agencies in an intensive external engagement process that will lead to the Sound Transit Board identifying a Preferred Alternative, as well as other alternatives to evaluate in an Environmental Impact Statement (EIS).

The WSBLE Project would provide fast, reliable light rail connections to dense residential and job centers throughout the region and add a new downtown Seattle light rail tunnel to provide efficient operating capacity for the entire regional system. It would consist of two separate Link extensions: one to West Seattle and the other to Ballard. The extension to West Seattle would operate from downtown Seattle to West Seattle's Alaska Junction neighborhood. The Ballard extension would operate from downtown Seattle to Ballard's Market Street area and include a new rail-only tunnel from the Chinatown/ International District to South Lake Union and Seattle Center/Uptown.

The alternatives and analysis conducted during the Alternatives Development phase are generally focused within a 0.5-mile study area boundary around the ST3 Representative Project. A map of the study area for the WSBLE Project is shown on **Figure 1-1** (West Seattle and Ballard Link Extensions Study Area).

1.2 Purpose of Report

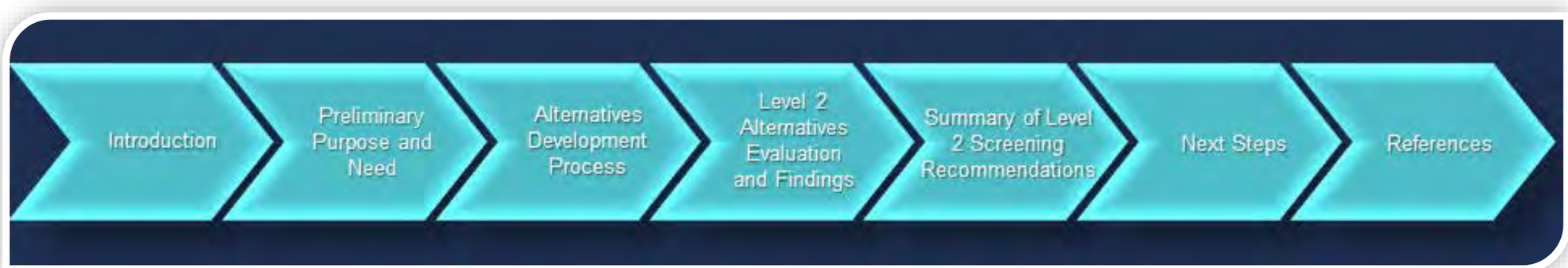
The *Level 1 Alternatives Development and Screening Technical Memorandum* describes the initial alternatives developed for the WSBLE Project and documents the findings of the Level 1 Screening process. This memorandum presents the evaluation criteria, measures and methods used to analyze the Level 1 alternatives, summarizes each alternative's performance relative to the evaluation criteria and measures, and provides conclusions about the alternative's relative performance. The memorandum concludes with identifying the alternatives that the Elected Leadership Group (ELG) recommended to be evaluated further in the Level 2 Screening and those alternatives not carried forward for further study.

Figure 1-1 West Seattle and Ballard Link Extensions Study Area

1.3 Report Organization

The *Level 1 Alternatives Development and Screening Technical Memorandum* is organized into the following sections:

- **Section 1 (Introduction):** Provides an overview of the WSBLE process and project, as well as purpose of this report.
- **Section 2 (Preliminary Purpose and Need):** Outlines the preliminary Purpose and Need for the WSBLE Project.
- **Section 3 (Alternatives Development Process):** Describes an overview of the process to develop, evaluate and screen alternatives, including the agency and community engagement efforts.
- **Section 4 (Level 1 Alternatives Evaluation and Findings):** Defines the alternatives within each study segment and highlights the results and findings for each alternative's performance relative to the evaluation criteria and measures.
- **Section 5 (Summary of Level 1 Screening Recommendations):** Summarizes the alternatives to be evaluated in greater detail in the Level 2 Screening, and those alternatives not carried forward for further study.
- **Section 6 (Next Steps):** Addresses the next steps for the Level 2 Screening.
- **Section 7 (References):** Lists the references cited in this report.



2 PRELIMINARY PURPOSE AND NEED

Sound Transit developed the preliminary Purpose and Need Statement for the WSBLE Project with input from stakeholders during the early scoping period between February 2 and March 5, 2018. The preliminary Purpose and Need Statement provides the foundation for the alternatives defined in Level 1, as well as the evaluation criteria, measures and methods used for the Level 1 evaluation and screening.

2.1 Project Purpose

The purpose of the WSBLE Project is to expand the Link light rail system from downtown Seattle to West Seattle and Ballard and to increase capacity and connectivity for regional connections to:

- Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit (LRT) service to communities in the project corridors as defined in ST3.
- Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet the projected transit demand.
- Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and *Sound Transit's Regional Transit Long-Range Plan* (RTLP) (2014).
- Implement a system that is consistent with the *ST3 Plan* (Sound Transit 2016) that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.
- Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.
- Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.
- Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.

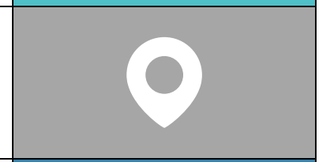
2.2 Need for Proposed Action

The WSBLE Project is needed because:

- Increasing roadway congestion on transit routes between downtown Seattle, West Seattle, and Ballard will continue to degrade transit performance and reliability.
- Regional population and employment growth will increase operational demands on the Downtown Seattle Transit Tunnel (DSTT).
- Regional and local plans call for HCT in the corridor consistent with the Puget Sound Regional Council's (PSRC) *VISION 2040* (2009) and Sound Transit's RTLP (2014).
- The region's citizens and communities, including travel-disadvantaged residents and low-income and minority populations, need long-term regional mobility and multimodal connectivity.
- Regional and local plans call for increased residential and/or employment density at and around HCT stations, and increased options for multimodal access.
- Environmental and sustainability goals of the state and region include reducing total vehicles miles traveled and greenhouse gas emissions.

To help organize the content of this report, the Purpose statements were distilled into short themes that reflect the primary focus of the full statement. Accompanying these brief themes are symbols that generally match the spirit of the summarized Purpose statement, as shown in **Table 2-1** (Level 1 Screening Themes and Symbols). The report uses these themes and symbols to denote these Purpose statements throughout.

Table 2-1 Level 1 Screening Themes and Symbols

Purpose Statement	Theme	Symbol
Provide high quality rapid, reliable, and efficient peak and off-peak LRT service to communities in the project corridors as defined in ST3.	Service performance and reliability in project corridor	
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet the projected transit demand.	Improve downtown capacity for regional connectivity	
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's RTLP.	Connect regional centers	
Implement a system that is consistent with the *ST3 Plan* that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.	Technically feasible and financially sustainable	
Expand mobility for the corridor and region's residents, which include transit dependent, low-income and minority populations.	Expand mobility for all	
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.	Encourage equitable and sustainable urban growth	
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.	Promoting a healthy built, natural and social environment	

3 ALTERNATIVES DEVELOPMENT PROCESS

The alternatives evaluation framework for the WSBLE Project is structured as a series of sequential evaluation levels, where increasingly detailed and comprehensive evaluation measures are applied to a decreasing number of alternatives at each level. The screening process initially reviews a wide range of alternatives during the first screening level, evaluated against a select set of measures to identify fatal flaws or major deficiencies. As the evaluation process progresses, the most suitable alternatives will emerge and be subject to more rigorous and detailed analysis, with more quantitative evaluation criteria applied. The screening process has been designed to provide insight into how the alternatives may be refined or modified to improve their effectiveness in satisfying the preliminary Purpose and Need. Eventually, a Preferred Alternative will be identified by the Sound Transit Board for advancement into the environmental review phase, along with other alternatives to evaluate in an EIS.

The three levels of analysis for the WSBLE Project are depicted on **Figure 3-1** (Alternatives Development Process). More detailed information on the overall Alternatives Development process can be found in the *Alternatives Evaluation Framework and Methodology Technical Memorandum* (Sound Transit 2018a).

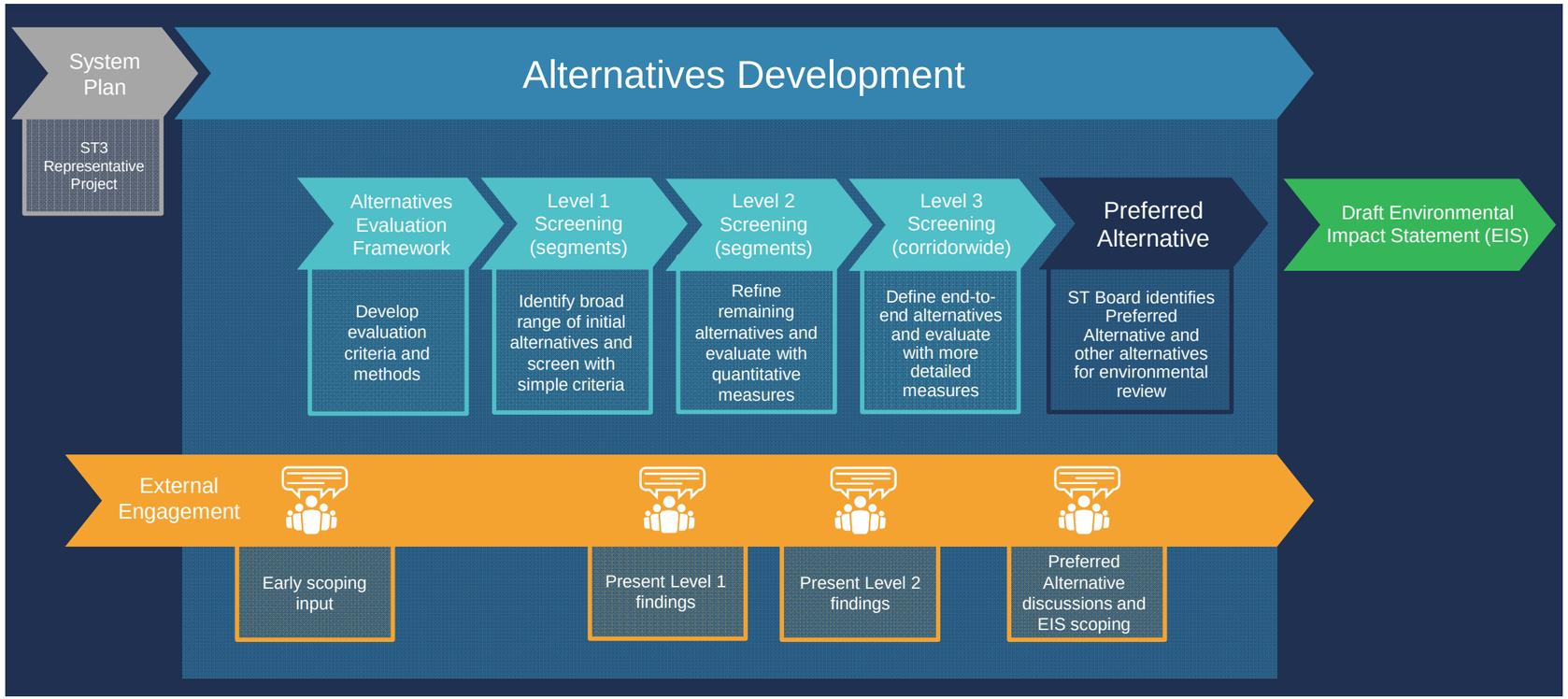


Figure 3-1 Alternatives Development Process

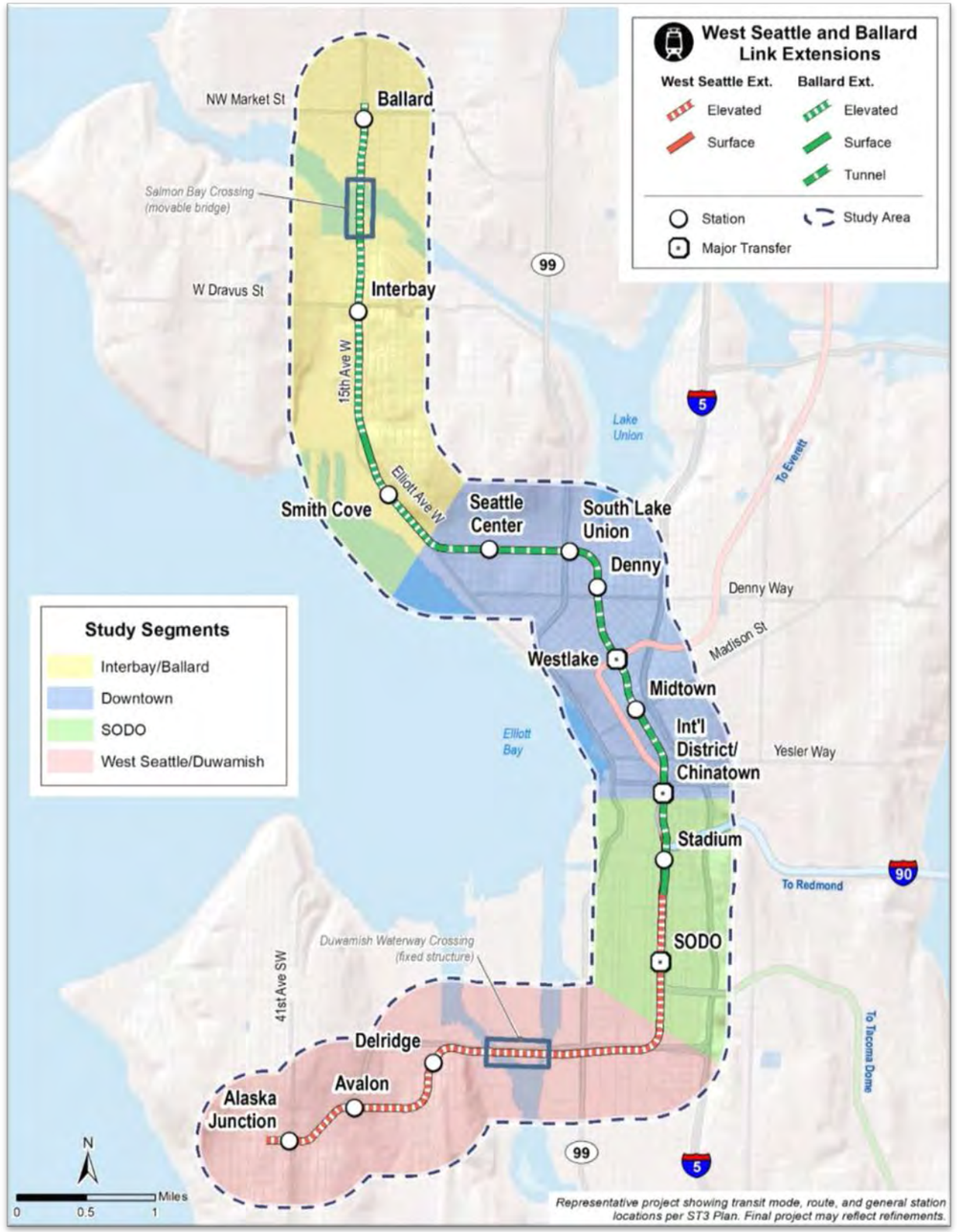


Figure 3-2 Study Segments for Alternatives Development Phase

3.1 Study Segments

Due to the unique characteristics of the study area for the WSBLE Project, the corridor was subdivided into four study segments for evaluation purposes in the Alternatives Development phase. Each study segment is oriented around the ST3 Representative Project and was geographically determined to provide logical end points and interfaces with the adjoining segments. These study segments allow for more detailed evaluation and analysis of specific planning, engineering or other issues. Following are the four study segments, as delineated on **Figure 3-2** (Study Segments for Alternatives Development Phase):

- West Seattle/Duwamish
- South of Downtown (SODO)
- Downtown
- Interbay/Ballard

The first two screening levels will be conducted within each of these study segments. After the alternatives are evaluated and screened down at a segment level, they will then be pieced together to define logical end-to-end alternatives from West Seattle to Ballard. **Figure 3-3** (Alternatives Screening Process) illustrates the alternatives screening process. The process is designed to help the Sound Transit Board identify a Preferred Alternative and other alternatives that are advanced to the environmental review phase.

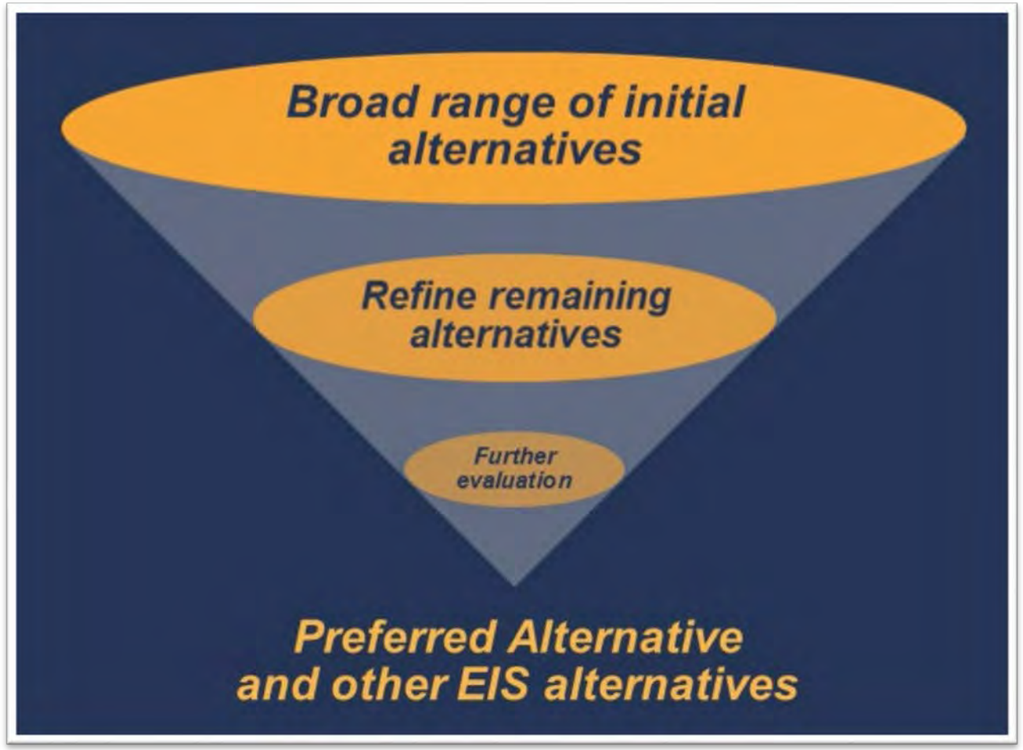


Figure 3-3 Alternatives Screening Process

3.2 Level 1 Screening Process

With a multi-tiered evaluation approach, each level of the screening analysis conforms to a level of detail necessary to make informed decisions about the alternatives considered. In this regard, different and increasingly detailed sets of evaluation criteria, measures and methods are used at each screening level. This approach allows alternatives to be narrowed from a wide range down to a select set of alternatives.

3.2.1 Evaluation Criteria, Measures and Methods

The Level 1 Screening relied on a set of simple evaluation criteria and measures that provided a consistent means of analysis among the study segments. The initial evaluation criteria and measures were chosen to facilitate early elimination of those alternatives that have minimal ability to achieve the WSBLE Project's preliminary Purpose and Need and/or have substantial challenges from a feasibility or regulatory standpoint. The ST3 Representative Project was used as a basis for comparison in the Level 1 Screening.

For the Level 1 Screening, Sound Transit developed evaluation criteria based on the Project's preliminary Purpose and Need. Supporting measures were identified under each criterion. Qualitative and/or quantitative evaluation methods were then specified for each measure. These evaluation criteria, measures and methods were used to assess the performance of each alternative relative to the ST3 Representative Project. **Figure 3-4** (Development of Evaluation Criteria, Measures and Methods) illustrates the relationship between the preliminary Purpose and Need statement and the evaluation criteria, measures and methods.

Figure 3-4 Development of Evaluation Criteria, Measures and Methods

Table 3-2 (Level 1 Screening Evaluation Criteria, Measures and Methods [by segment]) lists the detailed evaluation criteria, measures and methods used to evaluate the alternatives in Level 1. Each criterion has one or more quantitative or qualitative measures to differentiate between alternatives in terms of project performance and potential impacts. These criteria, measures and methods will evolve for each level of screening and incorporate stakeholder input.

The Level 1 Screening process results in alternatives recommended by the ELG to be carried forward for further evaluation in a subsequent Level 2 Screening. In cases where there is not sufficient information to dismiss alternatives from further consideration, the ELG may recommend those alternatives be carried forward into the later screening phases.

3.2.2 Evaluation Rating Thresholds

To identify alternatives likely to perform well versus those that may have fatal flaws or major deficiencies, the alternatives were rated against each evaluation criterion and supporting measure in **Table 3-2**. Ratings were based on each alternative's ability to satisfy the evaluation criteria and measures relative to the ST3 Representative Project. Three rating levels were established:

- **Higher Performance**: Rating level given when an alternative shows *higher performance* in comparison to the ST3 Representative Project.
- **Comparable Performance**: Rating level given when an alternative shows *comparable performance* to the ST3 Representative Project.
- **Lower Performance**: Rating Level given when an alternative shows *lower performance* in comparison to the ST3 Representative Project.

To summarize the performance ratings for each alternative relative to the ST3 Representative Project, rating symbols are used similar to Consumer Reports. **Table 3-1** (Performance Rating Symbols) displays the performance ratings and their corresponding symbols.

Table 3-1 Performance Rating Symbols

Performance Rating	Symbol
Higher Performance	●
Comparable Performance	◑
Lower Performance	○

The performance ratings for each alternative relative to the evaluation criteria are accompanied by an explanation (or rationale) for the rating given. While the Level 1 Screening is primarily designed as a qualitative screening of alternatives, some quantitative information and data are incorporated to measure potential benefits and/or impacts of the WSBLE Project. Additional quantitative measures, information, and data will be incorporated during the future Level 2 and Level 3 Screening phases.

Table 3-2 Level 1 Screening Evaluation Criteria, Measures and Methods (by segment)

Purpose and Need (1)	Evaluation Criteria (2)	Measure (3)	Quantitative or Qualitative (4)	Methods (5)
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3.	Reliable Service	Potential service interruptions and recoverability	Qualitative	Number of service interruptions during peak and off-peak travel periods (e.g., number of movable bridge openings, at-grade crossings, etc.) and redundancy and ability to re-route service
	Travel Times	LRT travel times	Quantitative	Estimated travel time for segment based on route characteristics
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand	Regional Connectivity	Network integration and operational flexibility to meet future demand	Qualitative	Ability to accommodate spine segmentation for regional LRT system connectivity and operational flexibility to meet future demand
	Transit Capacity	Passenger carrying capacity in downtown	Qualitative	Combined carrying capacity of downtown transit tunnels
	Projected Transit Demand	Ridership potential	Quantitative	Future 2040 total population and employment within 0.5-mile buffer of WSBLE Project stations
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and *Sound Transit's Regional Transit Long-Range Plan.*	Regional Centers Served	Station proximity to PSRC-designated regional centers	Quantitative	Number of PSRC-designated regional growth centers and manufacturing/industrial centers served by stations
	Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Qualitative	Ability to accommodate expansion potential of future LRT extensions identified in *Sound Transit's Regional Transit Long-Range Plan*
Implement a system that is consistent with the *ST3 Plan* that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain.	ST3 Consistency	Mode, route and general station locations per ST3	Qualitative	Consistency of mode, route and general station locations per ST3
		Potential ST3 operating plan effects	Qualitative	Integration of WSBLE Project into existing LRT spine and overall system (e.g., special trackwork, movable bridge implications, etc.)
	Technical Feasibility	Engineering constraints	Qualitative	Compliance with *Sound Transit Design Criteria Manual*, design criteria from agencies with jurisdiction and federal regulations
		Constructability issues	Qualitative	Major constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)
		Operational constraints	Qualitative	Consideration of operational constraints (e.g., access to maintenance facility, movable bridge, etc.)
	Financial Sustainability	Qualitative capital cost comparison	Qualitative	ST3 cost consistency based on identification of major capital cost drivers (e.g., route miles, route configuration, bridge type, etc.)
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations.	Historically Underserved Populations	Opportunities for historically underserved populations	Qualitative	Assessment of improved access to opportunities (i.e., employment, housing and transit) for historically underserved populations (i.e., environmental justice populations) within station areas, as well as along the frequent transit network that would serve the station
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies.	Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	Qualitative	Compatibility and consistency of station locations with local land use plans
		Station proximity to Seattle-designated Urban Centers and Villages	Qualitative	Proximity of station locations to centroid of defined urban centers and villages as identified in *City of Seattle Comprehensive Plan*
	Modal Integration	Bus/rail and rail/rail integration	Qualitative	Potential ability to integrate with bus and rail service and ease of transfers for transit customers
		Bicycle, pedestrian and persons with limited mobility connectivity	Qualitative	Accessibility of station locations to major existing and planned bicycle and pedestrian facilities and identification of major physical barriers to walking and biking within general station areas for bicyclists and pedestrians, including persons with limited mobility
	Station Area Development Opportunities	Development potential	Qualitative	Likelihood of land potentially available for future development within station areas based on zoning composition
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices.	Environmental Effects	Protected natural resources	Qualitative	Impacts to known natural resources (e.g., waterbodies, wetlands, etc.)
		Protected built and social environment	Qualitative	Impacts to known built and social resources (e.g., parks, historic properties/districts, Section 4(f)/6(f), construction impacts, etc.) and potential for residential and business displacements
		Burden on historically underserved populations	Qualitative	Assessment of how potential acquisitions and displacements would affect historically underserved populations (i.e., environmental justice populations) relative to other communities and displacement risk from station area redevelopment
	Traffic Operations	Traffic circulation and access	Qualitative	Effects on traffic and transit (i.e., bus and streetcar) operations, including potential lane restrictions, turn restrictions, and parking
	Economic Effects	Freight movement and access on land and water	Qualitative	Effects on freight mobility and future freight capacity expansion opportunities, including both on land and water
		Business and commerce effects	Qualitative	Effects on local businesses, as well as commercial and industrial areas

NOTES:
(1) Based on preliminary Purpose and Need Statement (dated January 24, 2018), with revisions incorporated from feedback received during early scoping.
(2) Criteria are subject to change as alternatives are refined and screened at each level, as well as to incorporate stakeholder input.
(3) Screening criteria and associated measures get progressively more detailed and quantitative as the alternatives are screened through Level 1, Level 2 and Level 3.
(4) Measures ranked from high to low based on comparison to ST3 Representative Project; "High" = higher performance, "Comparable" = comparable performance, "Low" = lower performance.
(5) Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.

3.3 Agency and Community Engagement

There are a variety of stakeholders engaged in the WSBLE Project, and their input will influence the decision-making process as the WSBLE Project advances during the Alternatives Development phase. The agency and external engagement process actively seek inputs and involvement from stakeholders through the following groups and forums:

- **Sound Transit Board:** Oversees implementation of WSBLE Project
- **Elected Leadership Group (ELG):** Elected officials who represent the project corridor and Sound Transit Board
- **Stakeholder Advisory Group (SAG):** Transit riders, residents, businesses, major institutional organizations, stakeholders, and members of the public
- **Interagency Group (IAG):** Senior staff from Sound Transit, city of Seattle and other partner agencies such as Port of Seattle, King County, Washington State Department of Transportation (WSDOT) and Federal Transit Administration (FTA)
- **Neighborhood Forums:** Community members interested in delving more deeply into issues specific to their neighborhood
- **Public:** People who live, work and commute in, through and around the Puget Sound region

These groups and forums supplement public engagement and outreach techniques already used by Sound Transit and offer opportunities for greater collaboration early in project development. This external engagement process is shown on **Figure 3-5** (Community Engagement and Collaboration Process).

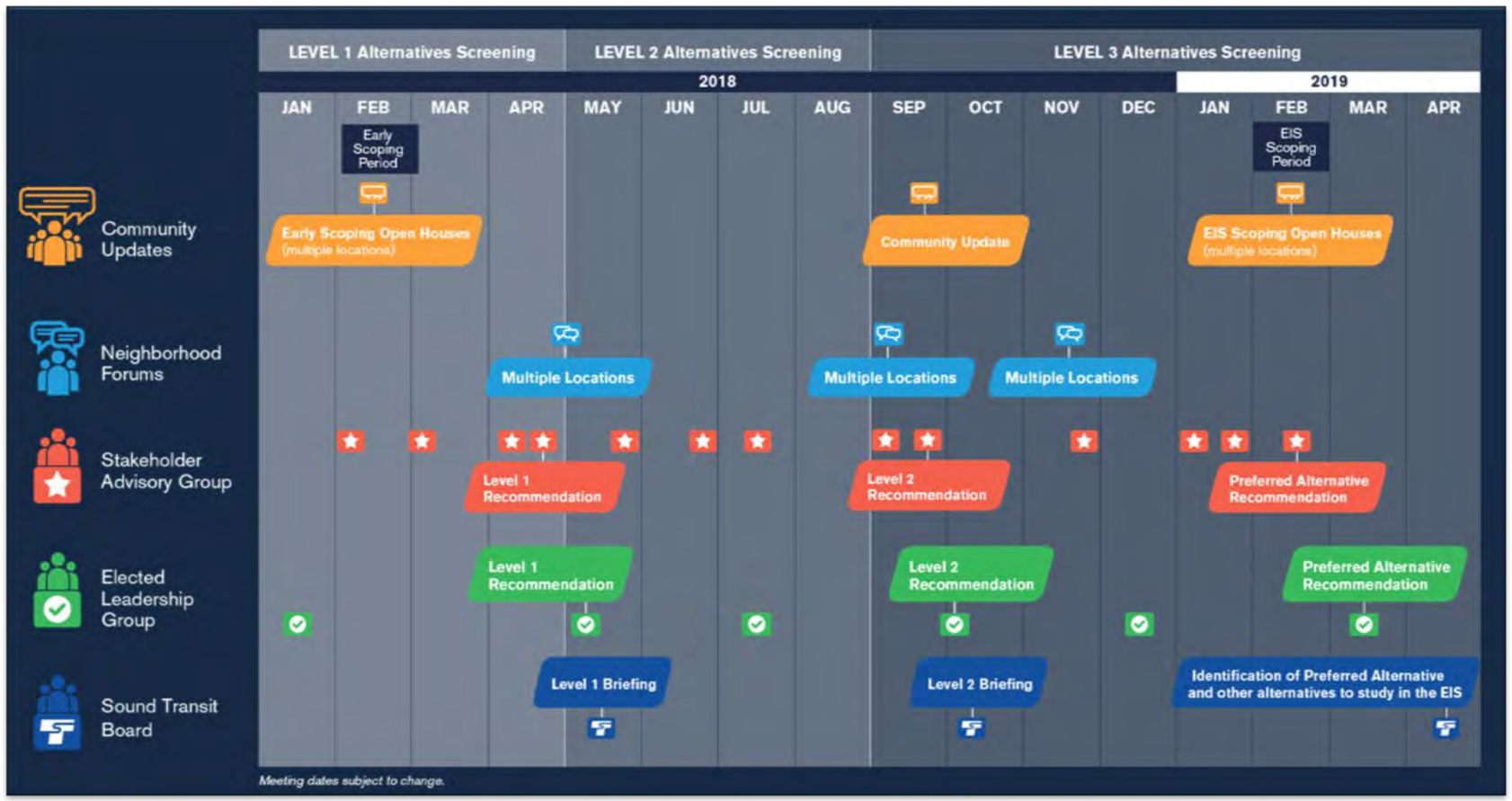


Figure 3-5 Community Engagement and Collaboration Process

3.3.1 Sound Transit Board

The Sound Transit Board oversees the implementation and delivery of the WSBLE Project, will identify the Preferred Alternative and other alternatives for the EIS and will make other major project decisions. The Board will consider recommendations and feedback from the ELG, SAG and public when making decisions.

3.3.2 Elected Leadership Group

The WSBLE Project's ELG is a group of elected officials that represent the service corridor and the Sound Transit Board. The purpose of this group is to reach consensus around key decisions and work through project issues as needed. The ELG:

- Appoints SAG members
- Works with project staff to understand and evaluate trade-offs
- Represents the communities they serve and shares community priorities
- Recommends a Preferred Alternative for the EIS to the Sound Transit Board based on the recommendations from the SAG, public input and the *ST3 Plan* project scope, schedule and budget

3.3.3 Stakeholder Advisory Group

The SAG provides a forum for community members to inform the development of alternatives for the project. Meetings are open to the public. The SAG:

- Highlights potential issues and considers trade-offs in the corridor
- Makes recommendations on a Preferred Alternative for the EIS to the ELG

3.3.4 Interagency Group

The IAG is composed of senior staff from Sound Transit and partner city, county, and transit agencies empowered with technical decision-making authority. The IAG:

- Examines technical aspects and resolves issues at a staff level wherever possible
- Identifies issues to bring before the ELG and SAG
- Recommends subjects to address within partnering and permitting agreements

3.3.5 Neighborhood Forums

Neighborhood forum events provide an opportunity for community members to connect with their neighbors, follow the project's progress, delve more deeply into issues specific to their neighborhood, and voice their opinions at major decision points. At neighborhood forums, participants work together to:

- Examine and discuss area- and community-specific issues and concerns associated with the proposed alternatives
- Provide detailed feedback to inform alternatives development and decision-making, which is shared with the IAG, SAG, ELG and the Sound Transit Board of Directors

3.3.6 Public

A variety of other public engagement activities complement all the engagement groups and forums including, but not limited to, open houses (in person and online), community briefings and meetings, e-newsletters, and attendance at fairs and festivals. The role of members of the public is to communicate ideas, concerns and questions about the project through a variety of communications channels to:

- Learn about the project and ask questions
- Provide feedback on topics and issues of interest
- Communicate to Sound Transit how the public wants to be engaged
- Share information and discuss the project with the community

3.4 Early Scoping Feedback

Sound Transit conducted an early scoping period between February 2 and March 5, 2018 to provide agencies, tribes, and the public an opportunity to comment on the WSBLE Project. The ST3 Representative Project served as the starting point for this dialogue, and stakeholders were invited to offer their suggestions on possible alternatives. The alternatives defined in the Level 1 Screening were a direct result of the input received during the early scoping period. Stakeholders were also asked for their input on the preliminary Purpose and Need for the WSBLE Project, as well as potential community benefits and impacts, which provided feedback into the evaluation criteria, measures and methods used in the Level 1 Screening.

Opportunities for public comment during the early scoping period included an agency meeting, three public open houses, and an online open house. Comments could be submitted at the early scoping meetings, as well as by email and mail. The *Early Scoping Summary Report* (Sound Transit 2018b) lists all comments received during early scoping.

Over 700 people attended the three public open houses, and seven agencies attended the agency early scoping meeting. Sound Transit received over 2,800 individual comments in various formats. Most comments focused on elevated routes in West Seattle and Interbay/Ballard, with many suggesting a variety of alternatives to these elevated routes.

Feedback from the early scoping process was used to update the preliminary Purpose and Need, develop Level 1 alternatives, and identify criteria for evaluating the alternatives. Some early scoping suggestions were not carried forward for further review in Level 1 because they were not identified or analyzed in the *ST3 Plan,* technically infeasible and/or deemed not practical.

4 LEVEL 1 ALTERNATIVES EVALUATION AND FINDINGS

The development, evaluation and screening of the Level 1 alternatives were conducted through a collaborative process in accordance with the *Alternatives Evaluation Framework and Methodology Technical Memorandum* (Sound Transit 2018a). This section defines the Level 1 alternatives, provides the evaluation findings, and presents the ELG's recommendations carried forward into Level 2. The section is organized by study segment—West Seattle/Duwamish, SODO, Downtown and Interbay/Ballard.

The Level 1 alternatives were developed within each of the four study segments. The ST3 Representative Project was the starting point for the alternatives development process. A range of 20 other alternatives to be studied in Level 1 was then identified to compare against the ST3 Representative Project, resulting in a total of 24 Level 1 alternatives distributed among the four study segments. Four additional alternatives were also studied for the International District/Chinatown Station under the Downtown Segment. The Level 1 alternatives were based on information from prior studies, technical analysis and considerations, and early scoping input from the agencies, public and stakeholders.

Figure 4-1 (Level 1 Alternatives by Study Segment) shows the study segments and lists the alternatives within each segment. Hereafter, each alternative within the four study segments is defined independently, with a map of the alternative illustrating the route, basic characteristics and station locations. The evaluation of the alternative is then summarized based on the criteria under each Purpose statement, with the detailed evaluation matrices for each alternative and segment found in the appendices. The ST3 Representative Project serves as the baseline against which the Level 1 alternatives are compared.

Summary tables of the Level 1 alternatives are also provided at the end of each study segment, along with other early scoping suggestions deemed not practical. Finally, the ELG recommendations regarding whether the alternatives should be carried forward for further study in Level 2 Screening are listed.

West Seattle/Duwamish	SODO	Downtown	Interbay/Ballard
• ST3 Representative Project	• ST3 Representative Project	• ST3 Representative Project	• ST3 Representative Project
• Pigeon Ridge/West Seattle Tunnel	• Massachusetts Tunnel Portal	• 5th/Mercer	• Elliott/15th/16th/Fixed Bridge
• West Seattle Bridge/ Fauntleroy	• Surface E-3	• 5th/Harrison	• West of BNSF/20th/17th/Fixed Bridge
• Yancy Street/West Seattle Tunnel	• Occidental Avenue	• 6th/Boren/Roy	• West of BNSF/20th/17th/Tunnel
• Oregon Street/Alaska Junction	• 6th Avenue	• 8th/6th/Republican	• East of BNSF/14th/Movable Bridge
• West Seattle Golf Course/ Alaska Junction		• 5th/Roy/Consolidated SLU Station	• Elliott/Armory Way/14th/Tunnel
		• 5th Avenue Bored Tunnel/ Mined Station	• West of BNSF/20th/Tunnel
		• 4th Avenue Cut-and-Cover Tunnel/Station	
		• 4th Avenue Bored Tunnel/ Mined Station	
		• Union Station Bored Tunnel/ Mined Station	

Figure 4-1 Level 1 Alternatives by Study Segment

4.1 West Seattle/Duwamish Segment Alternatives Evaluation

The West Seattle/Duwamish Segment included the following six alternatives during the Level 1 Screening:

- ST3 Representative Project (South of West Seattle Bridge)
- Pigeon Ridge/West Seattle Tunnel
- West Seattle Bridge/Fauntleroy
- Yancy Street/West Seattle Tunnel
- Oregon Street/Alaska Junction
- West Seattle Golf Course/Alaska Junction

These alternatives are delineated on **Figure 4-2** (West Seattle/Duwamish Segment—Level 1 Alternatives), with individual descriptions and evaluation of each alternative in the pages that follow. Refer to **Appendix A** (West Seattle/Duwamish Segment Level 1 Evaluation Matrices) for the detailed findings of each evaluation measure in this segment.

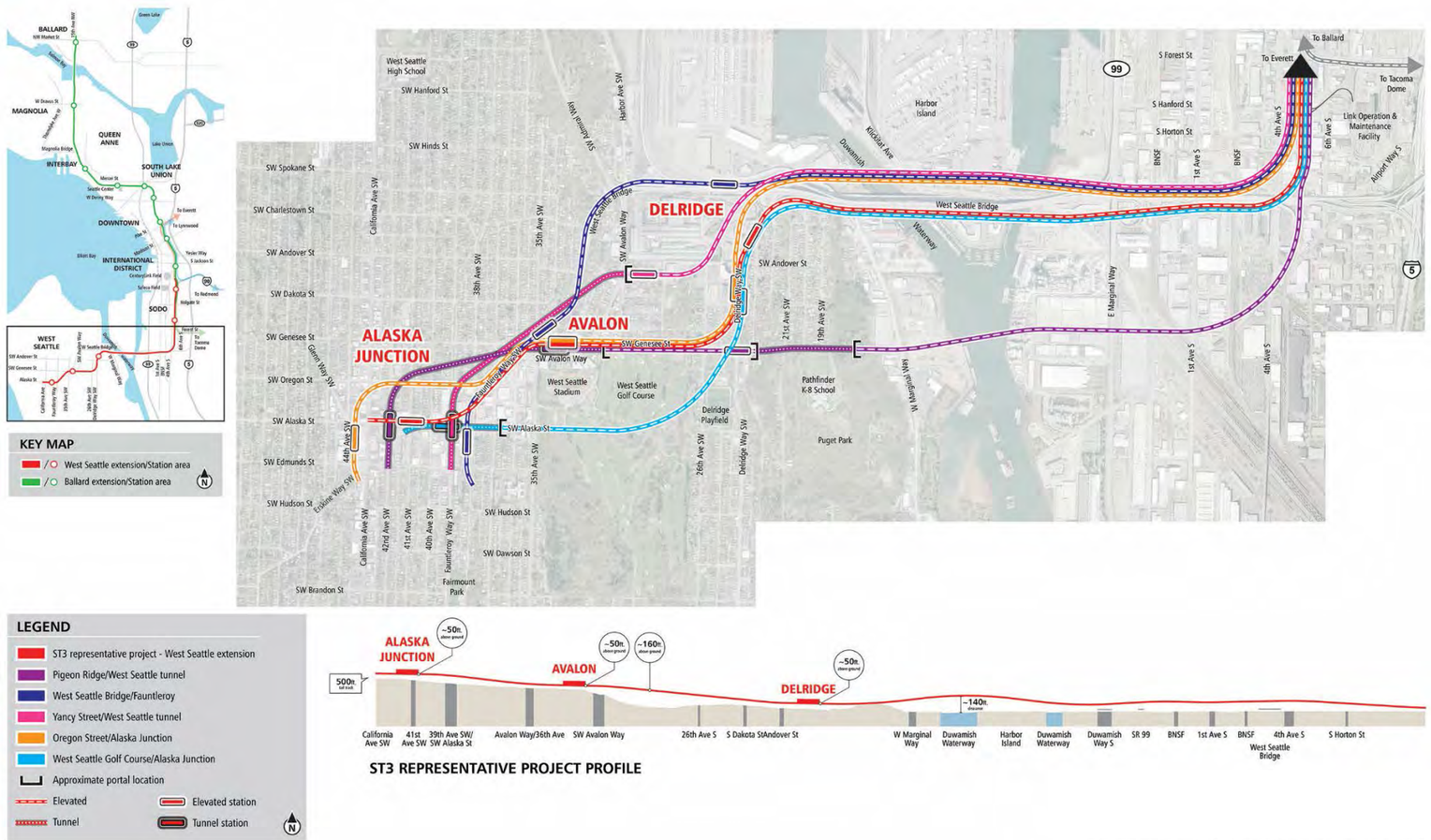
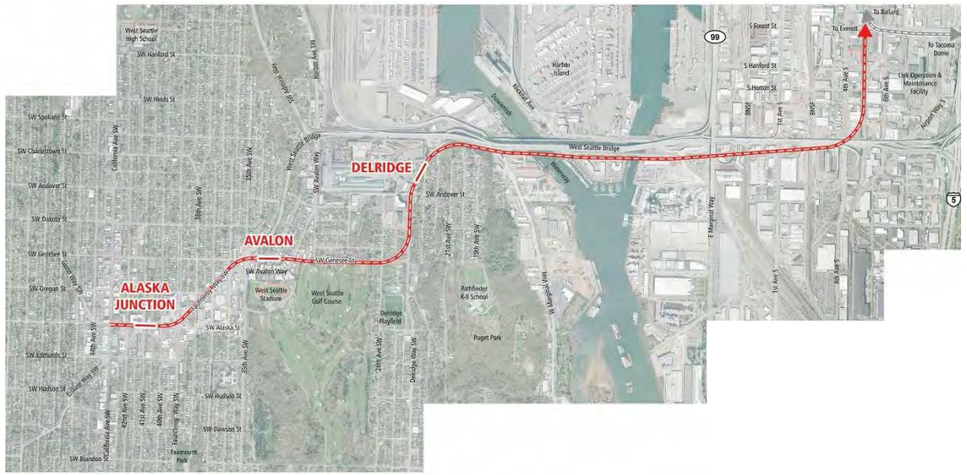


Figure 4-2 West Seattle/Duwamish Segment—Level 1 Alternatives

ST3 REPRESENTATIVE PROJECT

ALTERNATIVE

SEGMENT
WEST SEATTLE / DUWAMISH



ROUTE DESCRIPTION

The ST3 Representative Project would begin in SODO, running along the E3 busway in an elevated structure. The route would then cross over the West Seattle Bridge and head west on an elevated structure over E Marginal Way. It would then continue onto a new high-level bridge spanning the Duwamish River on the south side of the existing West Seattle Bridge. After crossing the river, the elevated route would round Pigeon Ridge, follow Delridge Way SW and run west along SW Genesee Street north of the West Seattle Golf Course. Continuing toward Alaska Junction, the elevated route would turn southwest on Fauntleroy Way SW, west on SW Alaska Street, and terminate at California Avenue SW.

STATIONS

Delridge — Elevated on Delridge Way SW north of SW Andover Street

Avalon — Elevated on SW Genesee Street between SW Avalon Way and 35th Avenue SW

Alaska Junction — Elevated on SW Alaska Street between 40th and 42nd avenues SW

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

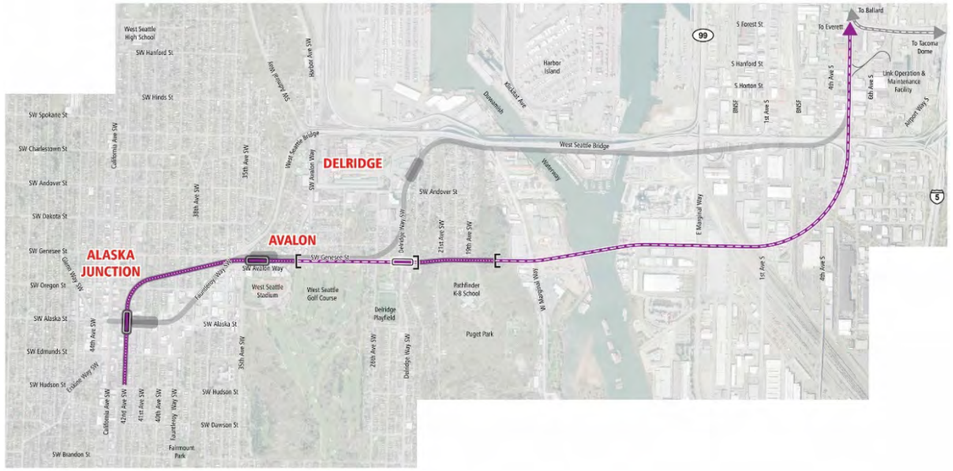
- Serves as baseline project against which Level 1 alternatives were defined and screened
- To be potentially refined and evaluated against remaining alternatives in Level 2 Screening

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Initial travel time estimate of 7 minutes between Alaska Junction and SODO stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity
Connect regional centers	• Directly serves Duwamish Manufacturing and Industrial Center (MIC) • Difficult to extend south for future expansion
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Long-curved span over S Spokane Street requires a more specialized bridge type • Difficult construction at Pigeon Point
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Encourage equitable and sustainable urban growth	• Local land use plans are supportive of all proposed stations • Alaska Junction and Avalon stations would serve the recently rezoned West Seattle Triangle area • Difficult to accommodate bus bays and layovers at Delridge and Alaska Junction stations
Promote a healthy built, natural, and social environment	• Potential impacts on wetlands and Longfellow Creek • Steep slopes and habitat on Pigeon Point affected • High residential displacements in Delridge and Avalon neighborhoods • Potential impacts to businesses and access at Terminal 102 on Harbor Island • Business displacements likely in Alaska Junction area

PIGEON RIDGE/WEST SEATTLE TUNNEL

ALTERNATIVE

SEGMENT
WEST SEATTLE / DUWAMISH



ROUTE DESCRIPTION

This alternative would also start in SODO on an elevated structure running along the E3 busway, but it would continue further south after crossing over the West Seattle Bridge. The elevated route would then turn west over 4th Avenue S, 1st Avenue S, the Union Pacific Railroad (UPRR) yard, and E Marginal Way. It would then cross the Duwamish River via a new high-level bridge, transition into a tunnel beneath Pigeon Ridge, and then emerge back onto an elevated structure paralleling SW Genesee Street. Approaching SW Avalon Way, the route would again transition into a tunnel to 42nd Avenue SW and then terminate in a tunnel near 42nd Avenue SW and SW Hudson Street.

STATIONS

Delridge	Elevated on SW Genesee Street spanning Delridge Way SW
Avalon	Tunnel south side of SW Genesee Street between SW Avalon Way and 35th Avenue SW
Alaska Junction	Tunnel under 42nd Avenue SW straddling SW Alaska Street

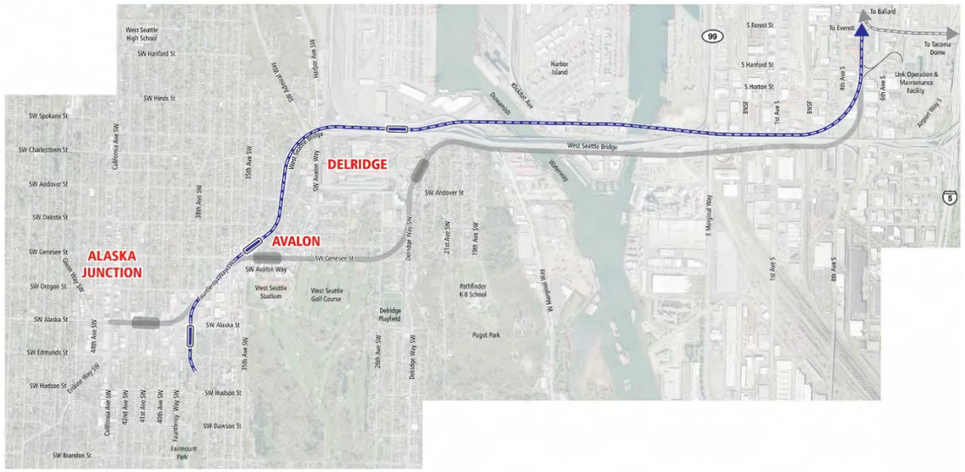
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Tunnels to Alaska Junction
- Tunnels to minimize neighborhood disruption
- Crosses Duwamish further south

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Travel time comparable to ST3 Representative Project, although larger curve radius south of West Seattle Bridge allows for faster LRT operating speeds
Improve Downtown capacity for regional connectivity	• Network integration, operational flexibility and passenger carrying capacity consistent with ST3 Representative Project • Potential for additional ridership due to location of Delridge Station; larger ridership capture shed with intersecting bus routes
Connect regional centers	• Tunnel route beneath Alaska Junction accommodates future southern LRT extension • Does not directly serve Duwamish MIC
Technically feasible and financially sustainable	• Mode, route, and station locations generally consistent with ST3 Representative Project • Two tunnels and longer route; approximately 2,000 linear feet longer than ST3 Representative Project • Better access to operations and maintenance facility (OMF) and requires less right-of-way (ROW) acquisition • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Encourage equitable and sustainable urban growth	• Similar to ST3 Representative Project; all three proposed stations located in areas with supportive land use plans • Alaska Junction and Avalon stations located within West Seattle Hub Urban Village
Promote a healthy built, natural, and social environment	• Potential impacts on open space, steep slopes, and habitat on West Duwamish Greenbelt and West Seattle Golf Course • Neighborhood impacts along SW Genesee Street in Delridge (visual, noise and construction) • Avoids disruption to freight movement on Harbor Island

WEST SEATTLE BRIDGE/FAUNTLEROY
ALTERNATIVE

SEGMENT
WEST SEATTLE / DUWAMISH



ROUTE DESCRIPTION

This alternative would also run on an elevated structure from SODO, but it would parallel the north side of the existing West Seattle Bridge. The route would cross over the Duwamish River via a new high-level bridge and continue to run adjacent to the existing bridge to Fauntleroy Way SW. Continuing southwest along Fauntleroy Way SW, the elevated route would eventually end west of 38th Avenue SW south of SW Edmunds Street.

STATIONS

Delridge	Elevated north of West Seattle Bridge
Avalon	At-grade/elevated on Fauntleroy east of 35th Avenue SW
Alaska Junction	Elevated west of 38th Avenue SW near SW Alaska Street

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

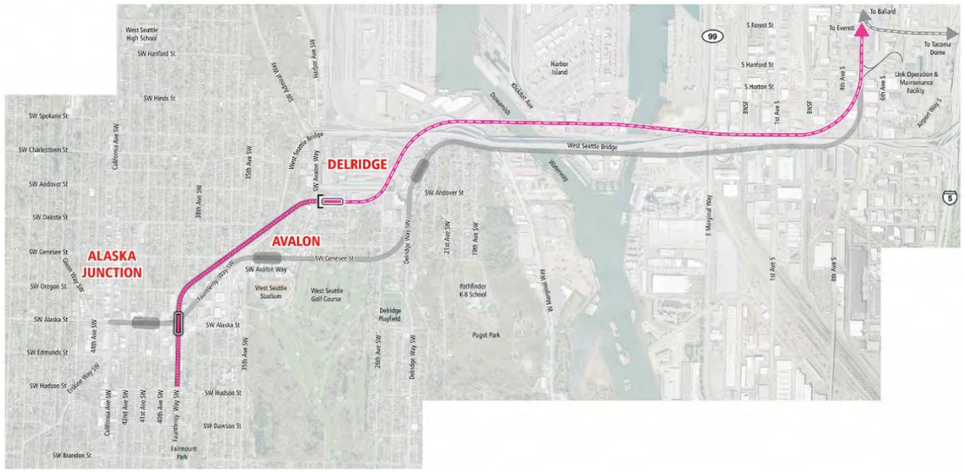
- Avoids Pigeon Ridge critical area; Duwamish crossing north of bridge
- Minimizes neighborhood disruption
- Changes terminal station location and orientation

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Network integration, operational flexibility, and passenger carrying capacity consistent with ST3 Representative Project • Potential for lower ridership capture with Delridge Station location
Connect regional centers	• Directly serves Duwamish MIC • Accommodates future southern LRT extension with ability to turn toward 35th Avenue SW
Technically feasible and financially sustainable	• Mode, route and station locations generally consistent with ST3 Representative Project • Long span bridge and tall Delridge Station; approximately 4,100 linear feet longer than ST3 Representative Project • Potential less ROW impact in West Seattle but greater Port of Seattle/Northwest Seaport Alliance (NWSA) ROW impact
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Encourage equitable and sustainable urban growth	• Delridge Station less consistent with local plans because Station area not located within North Delridge neighborhood and could affect uses within the MIC and Port of Seattle/NWSA • Less bus route diversion at Avalon Station, but more bus diversion to Delridge Station
Promote a healthy built, natural, and social environment	• Avoids potential impacts to wetlands and Longfellow Creek along SW Genesee Street and steep slopes and habitat on Pigeon Point • Avoids potential residential displacements in Delridge neighborhood and potentially Avalon neighborhood • Potential impacts to industrial businesses north of West Seattle Bridge

YANCY STREET/WEST SEATTLE TUNNEL

ALTERNATIVE

SEGMENT
WEST SEATTLE / DUWAMISH



ROUTE DESCRIPTION

This alternative would run on an elevated structure along the E3 busway in SODO before heading west north of the existing West Seattle Bridge. The route would then span the Duwamish River on a new high-level bridge. It would then cross over the West Seattle Bridge ramp and pass the Nucor Steel property to SW Yancy Street. Near the intersection of SW Yancy Street and SW Avalon Way, the route would enter a tunnel generally paralleling Fauntleroy Way SW in a southwesterly direction. The route would continue in a tunnel beneath Fauntleroy Way SW and end near SW Hudson Street.

STATIONS

Delridge/ Avalon — At-grade at SW Yancy Street between 28th and 30th avenues; consolidates Delridge and Avalon stations

Alaska Junction — Tunnel under 39th Avenue SW, Fauntleroy Way SW and SW Alaska Street

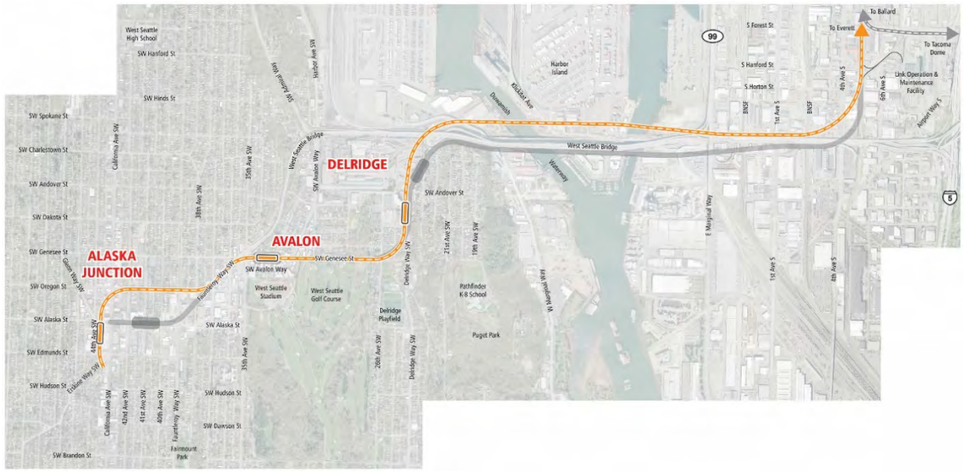
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Tunnels in West Seattle
- Consolidates stations
- Uses alternate routes in West Seattle
- Uses alternate routes to Duwamish Crossing
- Minimizes neighborhood disruption
- Accommodates future extension
- Orients terminal station north-south

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Travel time comparable to ST3 Representative Project, although faster average speed due to one less station
Improve Downtown capacity for regional connectivity	• Network integration, operational flexibility, and passenger carrying capacity consistent with ST3 Representative Project • Potential for lower ridership capture with one less station as compared to ST3 Representative Project
Connect regional centers	• Serves Duwamish MIC • Accommodates future southern LRT extension with ability to turn toward 35th Avenue SW
Technically feasible and financially sustainable	• Consolidated of stations not identified or analyzed in *ST3 Plan* • Requires Port of Seattle/NWSA property access east of west waterway and easement from Nucor Steel • More long-span bridges; approximately 2,740 linear feet longer than ST3 Representative Project • Approximate 4,800-foot tunnel • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Encourage equitable and sustainable urban growth	• Only one station located in West Seattle Hub Urban Village • Delridge Station located in a valley and adjacent to Nucor Steel • No strong street grid in this area, and many streets do not continue through to arterials
Promote a healthy built, natural, and social environment	• Lower potential for residential displacements in Delridge and Avalon neighborhoods • Potential impacts to traffic circulation near SW Yancy Street and SW Andover Street • Potential impacts on industrial businesses north of West Seattle Bridge and Nucor Steel

OREGON STREET/ALASKA JUNCTION
ALTERNATIVE

SEGMENT
WEST SEATTLE / DUWAMISH



ROUTE DESCRIPTION

This alternative would also run on an elevated structure along the E3 busway in SODO before heading west north of the existing West Seattle Bridge. The route would then span the Duwamish River on a new high-level, rail only bridge on the north side of the existing West Seattle Bridge. It would then cross over the West Seattle Bridge ramp and follow Delridge Way SW to SW Genesee Street. The elevated route would pass above SW Genesee Street, run southwest along Fauntleroy Way SW, then turn west and follow SW Oregon Street toward California Avenue SW. West of California Avenue SW, the elevated route would turn south and end just beyond SW Edmunds Street.

STATIONS

Delridge	Elevated on Delridge Way SW south of SW Andover Street
Avalon	Elevated on SW Genesee Street between SW Avalon Way and 35th Avenue SW
Alaska Junction	Elevated east of 44th Avenue SW south of SW Alaska Street

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

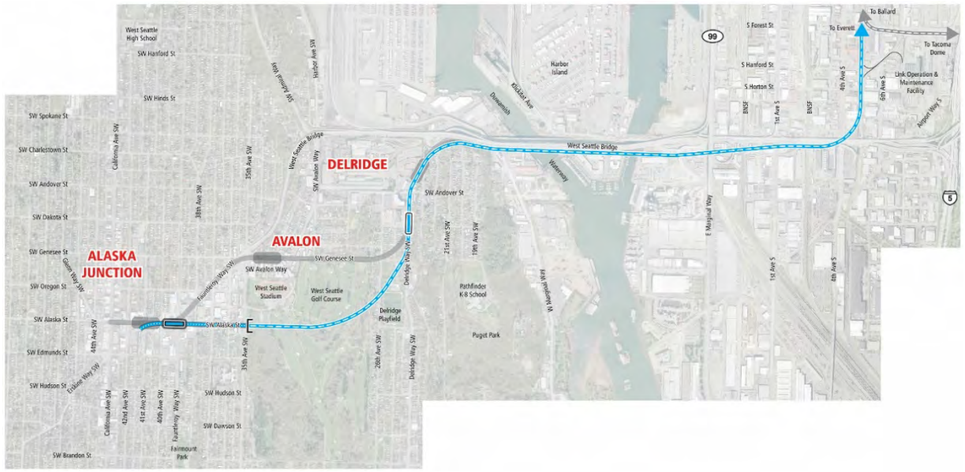
- Avoids SW Alaska Street disruption
- Avoids Pigeon Ridge critical area; Duwamish crossing north of bridge
- Shifts Delridge Station south
- Changes terminal station orientation north-south

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Longer route results in slightly longer travel time versus ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Network integration, operational flexibility, and passenger carrying capacity consistent with ST3 Representative Project • Potential for additional ridership due to location of Delridge and Alaska Junction stations
Connect regional centers	• Serves Duwamish MIC • Accommodates future southern LRT extension but further away from 35th Avenue SW, would require elevated structure along California Avenue SW to south
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Requires Port of Seattle property access • More long-span bridges, approximately 1,775 linear feet longer than ST3 Representative Project • More residential ROW impact on West Seattle relative to ST3 Representative Project
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Encourage equitable and sustainable urban growth	• Similar to ST3 Representative Project; all three proposed stations located in areas with supportive land use plans • Alaska Junction and Avalon stations located within West Seattle Hub Urban Village
Promote a healthy built, natural, and social environment	• Potential for greater residential displacements in Delridge, Avalon and Junction neighborhoods • Potential impacts on industrial businesses north of West Seattle Bridge • Construction could disrupt repackaging operations for maritime/truck shipment on west side of West Waterway • Potential business and industry displacements

WEST SEATTLE GOLF COURSE/ALASKA JUNCTION

ALTERNATIVE

SEGMENT
WEST SEATTLE / DUWAMISH



ROUTE DESCRIPTION

Beginning on an elevated structure along the E3 busway in SODO, this route would then cross over and parallel the south side of the existing West Seattle Bridge. The route would then span the Duwamish River on a new high-level bridge south of the existing bridge. Rounding Pigeon Point, the elevated route would continue south along Delridge Way SW. South of SW Genesee Street, the route would operate on an elevated structure through the West Seattle Golf Course before entering a tunnel beneath SW Alaska Street. The tunnel would then terminate beneath the intersection of SW Alaska Street and 41st Avenue SW.

STATIONS

Delridge — Elevated on Delridge Way SW south of SW Andover Street

Alaska Junction — Tunnel beneath SW Alaska Street at Fauntleroy Way SW

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Tunnels to Alaska Junction
- Consolidates stations
- Minimizes neighborhood disruption
- Routes through golf course

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated alternative • Travel time comparable to ST3 Representative Project; faster average speed due to one less station
Improve Downtown capacity for regional connectivity	• Network integration, operational flexibility and passenger carrying capacity consistent with ST3 Representative Project • Elimination of Avalon Station reduces ridership capture area and potential
Connect regional centers	• Serves Duwamish MIC • Oriented east-west in a tunnel at Fauntleroy Way SW, but would require a U-turn to extend south toward 35th Avenue SW in the future
Technically feasible and financially sustainable	• Consolidating stations not identified or analyzed in *ST3 Plan* • Long curved span over S Spokane Street requires a more specialized bridge type • Difficult construction at Pigeon Point • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Encourage equitable and sustainable urban growth	• Local land use plans supportive of stations at Alaska Junction and Delridge • Only one station located within West Seattle Hub Urban Village • Potential business displacements at SW Alaska Street and Fauntleroy Way SW
Promote a healthy built, natural, and social environment	• Traverses West Seattle Golf Course (Section 4(f) resource); a greater impact to this Section 4(f) resource • Affects steep slopes and habitat on Pigeon Point • Potential impacts on businesses and access at Terminal 102 on Harbor Island

4.1.1 West Seattle/Duwamish Segment Summary Findings

The extension of LRT to West Seattle has several design and construction challenges, particularly associated with the Duwamish River crossing, along with steep slope/terrain issues in the Delridge and Alaska Junction neighborhoods. The alternatives developed and considered during the Level 1 Screening attempted to address a variety of different challenges, and the evaluation sought to highlight potential benefits or impacts associated with each alternative. The Level 1 Screening also shed light on key themes and issues to consider as the alternatives carried forward into the Level 2 Screening are refined and evaluated. In the West Seattle/Duwamish Segment, existing environmental conditions and construction complexity issues emerged as key themes for future consideration. For the alternatives advanced to the Level 2 Screening, additional design efforts will be conducted to refine those alternatives that remain, and to provide additional detail on potential benefits or impacts of each alternative.

Table 4-1 (West Seattle/Duwamish Segment ELG Screening Recommendations) identifies the alternatives recommended by the ELG to be carried forward for additional design and evaluation as part of the Level 2 Screening. Additional evaluation information and results for the West Seattle/Duwamish alternatives may be found in **Appendix A** (West Seattle/Duwamish Segment Level 1 Evaluation Matrices).

Table 4-1 West Seattle/Duwamish Segment ELG Screening Recommendations

Level 1 Alternative	Notes/Comments	Carry Forward into Level 2?
ST3 Representative Project	• Baseline project	Yes
Oregon Street/Alaska Junction	• Avoids Fauntleroy and Alaska • Better orientation for future southern extension • Affects SW Oregon Street and 44th Avenue SW	Yes
West Seattle Bridge/Fauntleroy	• Lessens effects to Alaska Junction and Delridge • Better orientation for future southern extension • Creates isolated Delridge Station	No
Pigeon Ridge/West Seattle Tunnel	• Lessens effects to Port of Seattle, Alaska Junction, Delridge • Better orientation for future southern extension • Requires two tunnels; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships	Yes
Yancy Street/West Seattle Tunnel	• Lessens effects to Alaska Junction and Delridge • Better orientation for future southern extension • Consolidating stations not identified or analyzed in *ST3 Plan* • Requires tunnel; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships	No
West Seattle Golf Course/Alaska Junction (Tunnel)	• Crosses West Seattle Golf Course (Section 4(f) resource) • Lessens effect to Alaska Junction and Delridge • Consolidating stations not identified or analyzed in *ST3 Plan* • Requires tunnel; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships	Yes
Duwamish Tunnel	• Impractical tunnel depth and length	No
West Seattle Bridge	• Existing structure not built to accommodate LRT • Constructability issues	No
Gondola/ rail/bus bridge (1)	• Mode not identified or analyzed in *ST3 Plan*	No
Extensions to Alki, Admiral, etc.	• Extensions not identified or analyzed in *ST3 Plan*	No

NOTES:
(1) Bridge alternatives do not preclude pedestrian/bicycle paths.

4.2 SODO Segment Alternatives Evaluation

The SODO Segment included the following five alternatives during the Level 1 Screening:

- ST3 Representative Project (Elevated E-3)
- Massachusetts Tunnel Portal
- Surface E-3
- Occidental Avenue
- 6th Avenue

These alternatives are delineated on **Figure 4-3** (SODO Segment—Level 1 Alternatives), with individual descriptions and evaluation of each alternative in the pages that follow. Refer to **Appendix B** (SODO Segment Level 1 Evaluation Matrices) for the detailed findings of each evaluation measure in this segment.

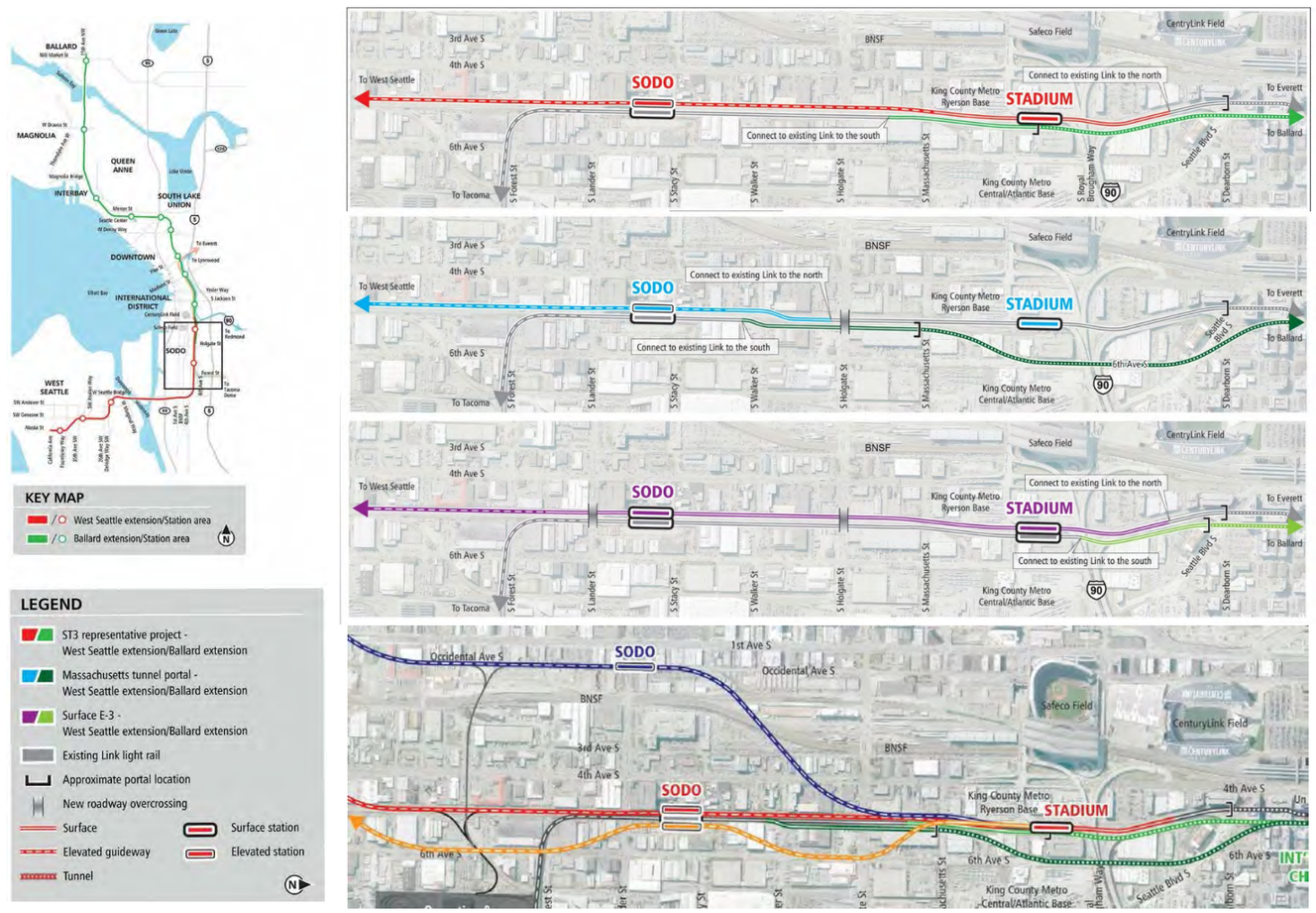
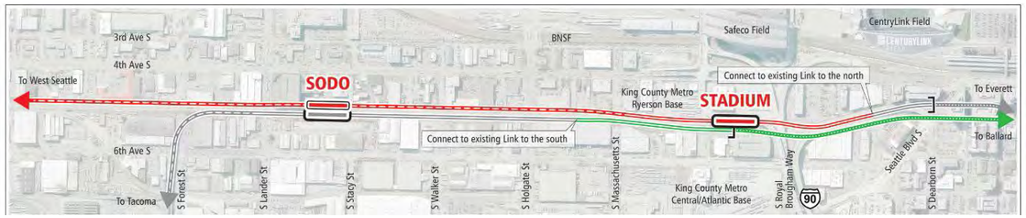


Figure 4-3 SODO Segment—Level 1 Alternatives

ST3 REPRESENTATIVE PROJECT
ALTERNATIVE

SEGMENT
SODO



ROUTE DESCRIPTION

After crossing over the Spokane Street Viaduct, this alternative would run on an elevated guideway along the E3 busway to a new elevated SODO Station adjacent to the existing at-grade SODO Station. The route would continue north along the E3 busway in an elevated configuration. At approximately S Massachusetts Street, the route would transition down to existing grade, then continue to a rebuilt, at-grade Stadium Station, which would serve the West Seattle to Everett line. The route would then continue at-grade across S Royal Brougham Way and tie into the existing light rail line and DSTT.

At approximately the location of the existing Stadium Station, the existing light rail line from Tacoma would transition into a new cut-and-cover tunnel that would continue under S Royal Brougham Way. The existing Stadium Station would be demolished and rebuilt to accommodate the new tunnel portal. The tunnel route would continue north along the east side of the D-2 ramps carrying the East Link light rail line into a new International District/ Chinatown tunnel station.

STATIONS

SODO — Elevated immediately west of existing SODO Station

Stadium (existing) — Existing at-grade rebuilt and relocated on West Seattle line only

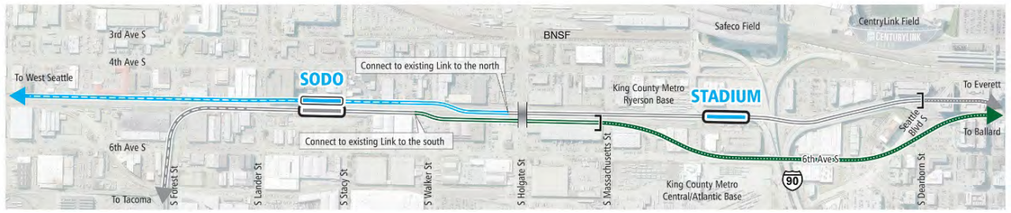
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Serves as baseline project against which Level 1 alternatives were defined and screened
- To be potentially refined and evaluated against remaining alternatives in Level 2 Screening

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Initial travel time estimate of 3 minutes between SODO and International District/Chinatown stations
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Includes portal for new light rail tunnel beneath downtown
Connect regional centers	• Serves Duwamish MIC • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Facilitates special trackwork and system reliability • "S" development encroachment and ROW needs • Route requires WSDOT/East Link structure modifications • Limited area for construction staging may result in increased service disruption • Overhead transmission line greatest impact
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Encourage equitable and sustainable urban growth	• Station locations, development potential, and operability with buses and non-motorized transportation modes similar to ST3 Representative Project
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Located in critical area for liquefaction prone soils (Seattle Environmentally Critical Areas [ECA]) • Potential impacts to National Register of Historic Places (NRHP) listed Immigration and Naturalization Service (INS) Building • Potential business/freight impacts during construction

MASSACHUSETTS TUNNEL PORTAL
ALTERNATIVE

SEGMENT
SODO



ROUTE DESCRIPTION

Once across the Spokane Street Viaduct via an elevated guideway, this route would reach the new elevated SODO Station adjacent to the existing at-grade SODO Station. Heading north, the route would transition down to grade, then tie into the existing light rail line at S Holgate Street.

North of the existing SODO Station, the existing light rail line from Tacoma would transition to a new line to the east. The route would transition into a retained cut configuration and then into a cut-and-cover tunnel. The tunnel portal for the new downtown transit tunnel would be located near SW Massachusetts Street, between the SODO busway and 6th Avenue S. The route would then continue north beneath 6th Avenue S, then transition to 5th Avenue S into a new International District/Chinatown tunnel station.

STATIONS

SODO — Elevated immediately west of existing SODO Station

Stadium (existing) — Existing at-grade remains on West Seattle line only

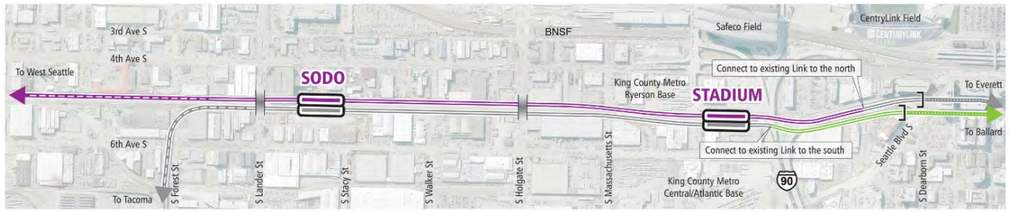
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Grade separates S Holgate Street
- Minimizes potential cut-and-cover construction impacts on 5th Avenue S

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Network integration, operational flexibility, and passenger carrying capacity consistent with ST3 Representative Project • Potential ridership consistent with ST3 Representative Project
Connect regional centers	• Serves Duwamish MIC • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Proximity issue to foundations of WSDOT/East Link structures • Design of bored tunnel and portal in poor soils and high-water table • Greater ROW needs than ST3 Representative Project • Longer tunnel length; approximately 800 feet longer
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Encourage equitable and sustainable urban growth	• Station locations, development potential, and operability with buses and non-motorized transportation modes similar to ST3 Representative Project
Promote a healthy built, natural, and social environment	• Located in critical area for liquefaction prone soils (Seattle ECA) • Removal of at-grade crossing at Holgate would benefit freight mobility • Avoids potential traffic impacts to S Royal Brougham Way • Low potential for business displacements

SURFACE E3
ALTERNATIVE

SEGMENT
SODO



ROUTE DESCRIPTION

Once across the Spokane Street Viaduct via an elevated guideway, this route would travel along the E3 busway to S Forest Street and then transition to grade south of S Lander Street. It would then enter a new at-grade SODO Station and continue north to a new Stadium Station serving the West Seattle to Everett line. The route would continue at-grade across S Royal Brougham Way and tie into the existing light rail line and DSTT.

The existing Stadium Station would remain to serve the Ballard to Tacoma line. North of the Stadium Station, the Tacoma line would transition to a new at-grade line across S Royal Brougham Way and along the east side of the D-2 ramps carrying the East Link light rail line. The route would then enter a cut-and-cover tunnel portal located south of Seattle Boulevard S into a new International District/Chinatown tunnel station.

STATIONS

SODO — At-grade immediately west of existing SODO Station

Stadium (existing) — Existing at-grade remains on Ballard line

Stadium (new) — New at-grade for West Seattle line

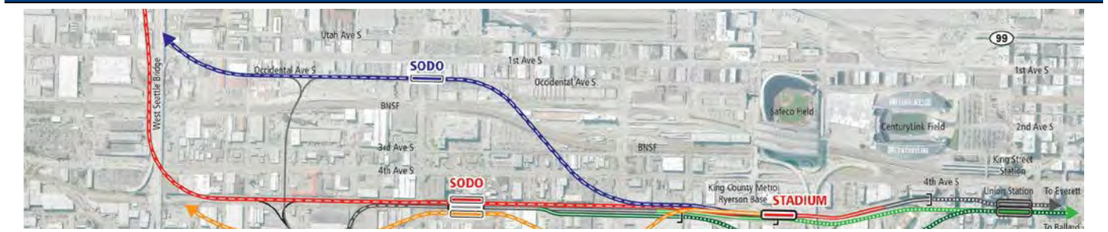
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Grade separates S Lander Street
- Grade separates S Holgate Street
- Places Stadium Station on both lines
- Places light rail at grade

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Requires full or partial closure of S Royal Brougham Way • Full grade separation of Holgate and Lander; improves reliability of existing light rail line • Travel time similar to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Network integration, operational flexibility, and passenger carrying capacity consistent with ST3 Representative Project • Two Stadium Stations allows for greater regional connectivity
Connect regional centers	• Serves Duwamish MIC • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Roadway grade separations facilities special trackwork for connection between West Seattle and Ballard lines • Minimizes potential impacts to WSDOT/East Link structures • Reduced length of cut-and-cover tunnel • Roadway overcrossings in poor soils; increased infrastructure for grade separated roadways • "S" Development ROW needs
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Encourage equitable and sustainable urban growth	• Station locations, development potential, and operability with buses and non-motorized transportation modes similar to ST3 Representative Project
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources (area heavily urbanized already) • Located in critical area for liquefaction prone soils (Seattle ECA) • Potential impacts on NRHP-listed INS Building

OCCIDENTAL AVENUE
ALTERNATIVE

SEGMENT
SODO



ROUTE DESCRIPTION

This alternative would cross over the Spokane Street Viaduct (i.e., the approach to the West Seattle Bridge) near 1st Avenue S and then head north along the east side of Occidental Avenue S on an elevated structure. A new elevated SODO Station would be located just east of Occidental Avenue S, straddling S Lander Street. The route would then turn northeast over the Burlington Northern Santa Fe (BNSF) Railway tracks and 4th Avenue S before merging into the SODO E3 busway. It would then transition to existing grade along the SODO E3 busway north of S Holgate Street and continue to a new Stadium Station serving the West Seattle to Everett line. The route would continue at-grade across S Royal Brougham Way and tie into the existing light rail line to Everett and DSTT.

The existing Stadium Station would remain to serve the Ballard to Tacoma line. North of the Stadium Station, the Ballard to Tacoma line would transition to a new at-grade line across S Royal Brougham Way and along the east side of the D-2 ramps carrying the East Link light rail line. The route would then enter a cut-and-cover tunnel portal located south of Seattle Boulevard S into a new International District/Chinatown tunnel station under 5th Avenue S, which would be constructed via cut-and-cover methods.

STATIONS

SODO	New elevated at Occidental Avenue S and S Lander Street for West Seattle line
Stadium (existing)	Existing at-grade remains on Ballard line
Stadium (new)	New at-grade immediately west of existing station for West Seattle line

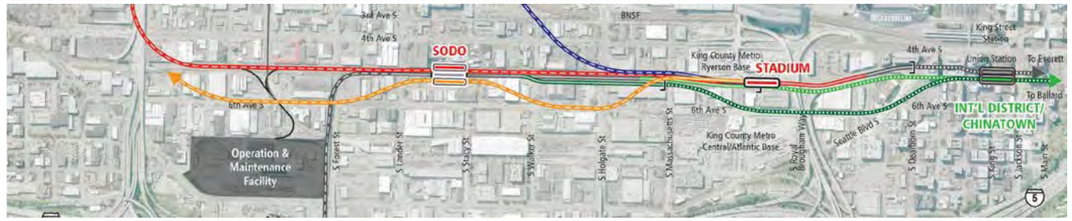
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Runs on long elevated structure along Occidental Avenue S and across BNSF tracks
- Avoids running along E3 busway
- Places Stadium Station on both lines

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Reduces network integration and connectivity with location of new SODO Station on Occidental Avenue S • Passenger carrying capacity consistent with ST3 Representative Project • Total 2040 population and employment within 0.5-mile buffer of stations approximately 3% higher than ST3 Representative Project (approximately 24,400)
Connect regional centers	• Serves Duwamish MIC • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Difficult to provide interconnection between West Seattle and Ballard lines and pocket tracks • Engineering challenges due to increased long-span elevated guideway structures over BNSF tracks, light rail mainline, and OMF connection; degraded connection to OMF • Limited ROW on Occidental Avenue S that includes large underground utilities • Reduces interference to E3 busway and overhead transmission lines • Additional property impacts for crossing from Spokane Street S to Occidental Avenue S and from Occidental Avenue S to the E3 busway
Expand mobility for all	• Route and stations located in areas with similar low-income and minority populations as rest of the city • Increases access to SODO employment area for historically underserved population in other parts of region
Encourage equitable and sustainable urban growth	• Reduced connectivity between existing and new SODO stations • Better access to regional bicycle facilities • New SODO station located in more pedestrian-friendly environment compared with ST3 Representative Project
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources (area heavily urbanized already) • Located in critical area for liquefaction prone soils (Seattle ECA) • Potential impacts on NRHP-listed INS Building • Potential temporary and permanent traffic and business/freight impacts due to elevated guideway in street ROW

6TH AVENUE
ALTERNATIVE

SEGMENT
SODO



ROUTE DESCRIPTION

After crossing over the Spokane Street Viaduct, this alternative would run on an elevated guideway along 6th Avenue S, transitioning to a new elevated SODO Station adjacent to the existing at-grade SODO Station along the E3 busway. The route would then turn back to 6th Avenue S and continue north on an elevated guideway. At approximately S Holgate Street, the route would curve back to the E3 busway and transition down to existing grade. It would then continue to a rebuilt, at-grade Stadium Station, which would serve the West Seattle to Everett line. The route would then continue at grade across S Royal Brougham Way and tie into the existing light rail line and DSTT.

At approximately the location of the existing Stadium Station, the existing light rail line from Tacoma would transition into a new cut-and-cover tunnel that would continue under S Royal Brougham Way. The existing Stadium Station would be demolished and rebuilt to accommodate the new tunnel portal. The tunnel route would continue north along the east side of the D-2 ramps carrying the East Link light rail line into a new International District/Chinatown tunnel station.

STATIONS

SODO	Elevated immediately east of existing SODO Station
Stadium (existing)	Existing at-grade rebuilt and relocated on West Seattle line only

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Avoids running along the E3 busway

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Network integration, operational flexibility, and passenger carrying capacity consistent with ST3 Representative Project
Connect regional centers	• Serves Duwamish MIC • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• No interconnection between West Seattle and Ballard lines and pocket tracks • Engineering challenges due to difficult connection to OMF, high elevated guideway over existing elevated light rail line at S Forest Street and braiding lines near Stadium Station • Reduces interference to E3 busway and overhead transmission lines • Increases traffic and property impacts along 6th Avenue S and with transitions to SODO Station
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city
Encourage equitable and sustainable urban growth	• Station locations, development potential, and operability with buses and non-motorized transportation modes similar to ST3 Representative Project
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources (area heavily urbanized already) • Located in critical area for liquefaction prone soils (Seattle ECA) • Potential impacts on NRHP-listed INS Building • Potential temporary and permanent traffic and business/freight impacts due to elevated guideway in street ROW

4.2.1 SODO Segment Summary Findings

The SODO Segment has several unique transit operational challenges for both bus and rail services that directly influence the design of the WSBLE Project. These operational challenges include how the WSBLE Project would connect with Sound Transit's OMF, the convergence of the current Link LRT line, the addition of the future East Link LRT line, and the switching requirements (referred to as spine segmentation) that will enable the West Seattle line to operate north to Everett, and the Ballard line to run south to Tacoma. Furthermore, while the new downtown transit tunnel is constructed, the SODO Station is a potential interim terminus for the LRT line to West Seattle, until the new tunnel is completed to enable the Ballard-Tacoma line to become operational. In addition to the existing and future light rail lines, King County Metro Transit's (KCM) E3 busway is an important operational component for the region's bus network, particularly bus routes serving southern King County. The strategic importance of the E3 busway as a north-south transit spine is further emphasized by the connection to KCM's Ryerson Base.

Utilities also present several challenges in the SODO Segment. Seattle City Light (SCL), the primary electrical power provider to the region, has high-voltage transmission lines and transmission substations in the SODO Segment. The SCL South Service Center on 4th Avenue S is immediately south of the West Seattle Bridge/Spokane Street Viaduct. In addition to electrical transmission, several high-pressure gas mains, consolidated sewers, and water mains are found throughout the SODO region to service the Port of Seattle and auxiliary businesses and services.

Finally, the SODO Segment has experienced rapid land use change over the past two decades, with the expansion of the stadium district and growth of commercial enterprises converting manufacturing, industrial, and warehouse buildings into mixed-use development. The City of Seattle has enacted zoning classifications and special districts (most notably the MICs) to preserve and protect industrial lands in SODO and Interbay. The SODO Segment continues to see a heavy volume of daily freight traffic, both multiaxle trucks and freight railroad activity, serving the Port of Seattle. Maintaining freight movement and commerce activities during and after construction of the WSBLE Project will be an important consideration in the refinement of alternatives during the Level 2 Screening.

Table 4-2 (SODO Segment ELG Screening Recommendations) identifies the alternatives recommended by the ELG to be carried forward for additional design and evaluation as part of the Level 2 Screening. Additional evaluation information and results for the SODO alternatives may be found in **Appendix B** (SODO Segment Level 1 Evaluation Matrices).

Table 4-2 SODO Segment ELG Screening Recommendations

Level 1 Alternative	Notes/Comments	Carry Forward into Level 2?
ST3 Representative Project	• Baseline project	Yes
Surface E-3	• Less service disruption during construction • Accommodates Stadium Station on both lines • Eliminates existing grade crossings at Lander and Holgate • Closes S Royal Brougham Way between 4th Avenue S and 6th Avenue S	Yes
Massachusetts Tunnel Portal	• Reduces cut-and-cover construction on 5th Avenue S in International District/Chinatown • Less service disruption during construction • Eliminates existing grade crossing at Holgate • Requires longer tunnel, with more property acquisitions	Yes
Occidental Avenue	• Long-span elevated crossing over BNSF tracks • Traffic and freight access effects on Occidental Avenue S • Property impacts of alignment crossing from Occidental Avenue S to Stadium Station • Long track connection to OMF; no track connections between lines	Yes
6th Avenue	• OMF connection technically challenging • Property impacts to locate SODO Station adjacent to existing station • Braiding lines could have major construction challenges and service disruptions	No
Maintain buses on E3	• Not practical due to ROW constraints	No
First Avenue route	• Route and station locations not identified or analyzed in *ST3 Plan*	No
Design for potential extension south to Georgetown	• Extension not identified or analyzed in *ST3 Plan*	No
Track interlining	• Requires grade-separated junctions; does not accommodate buses on E3 busway • Creates bottleneck; impacts service reliability and limits system capacity	No
Extended Ballard Line	• Rebuild of S Forest Street junction requires disruption of existing LRT service • Deep mined International District/Chinatown Station; constructability challenges • Additional guideway length; no track connections	No

4.3 Downtown Segment Alternatives Evaluation

The Downtown Segment contained the following six alternatives during the Level 1 Screening:

- ST3 Representative Project (5th/6th/Republican)
- 5th Avenue/Harrison
- 5th Avenue/Mercer
- 6th Avenue/Boren/Roy
- 8th Avenue/6th Avenue/Republican
- 5th Avenue/Roy/Consolidated South Lake Union (SLU) Station

These alternatives are delineated on **Figure 4-4** (Downtown Segment—Level 1 Alternatives), with individual descriptions and evaluation of each alternative in the pages that follow. Refer to **Appendix C** (Downtown Segment and International District/Chinatown Station Level 1 Evaluation Matrices) for the detailed findings of each evaluation measure in this segment.

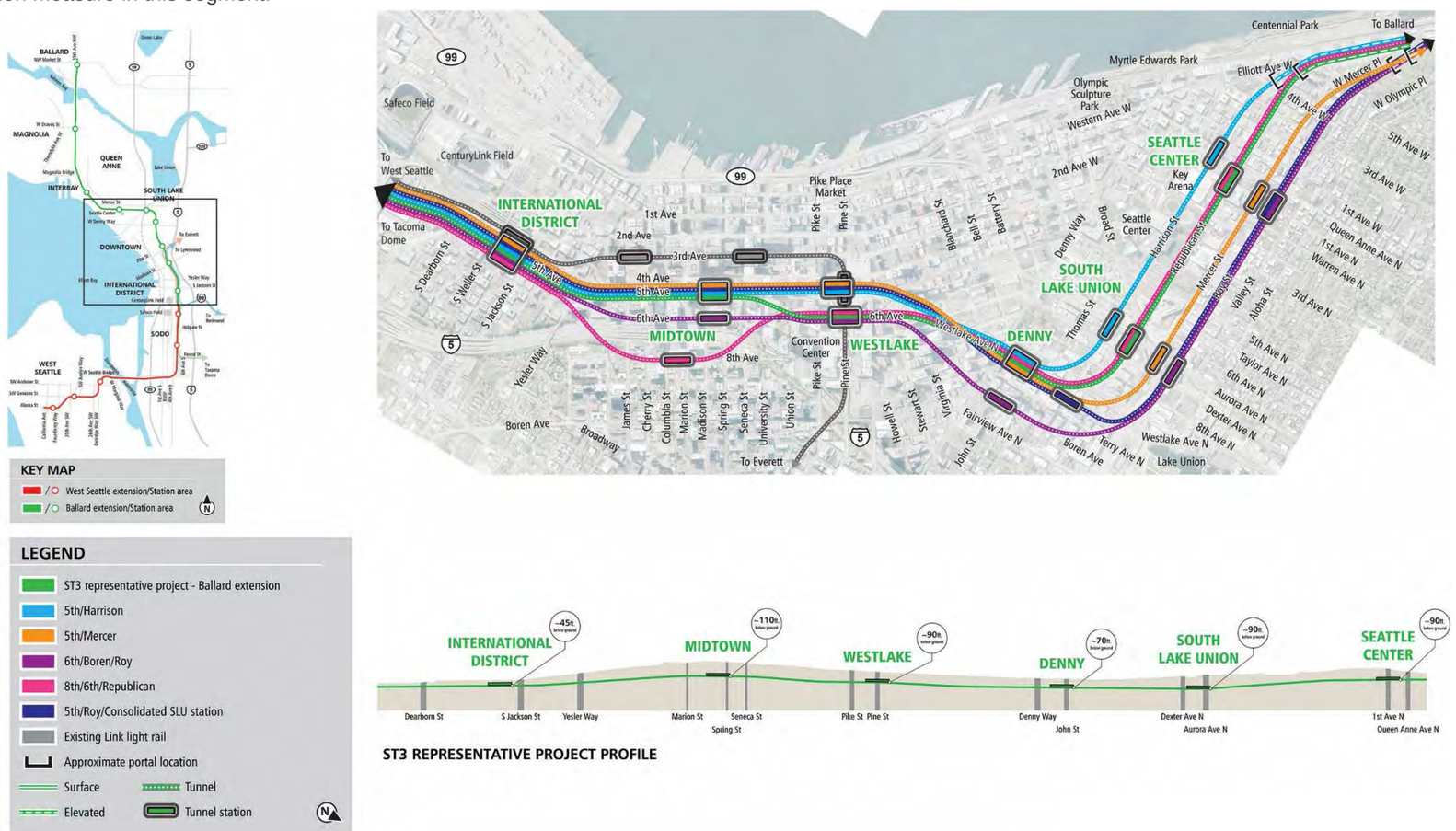
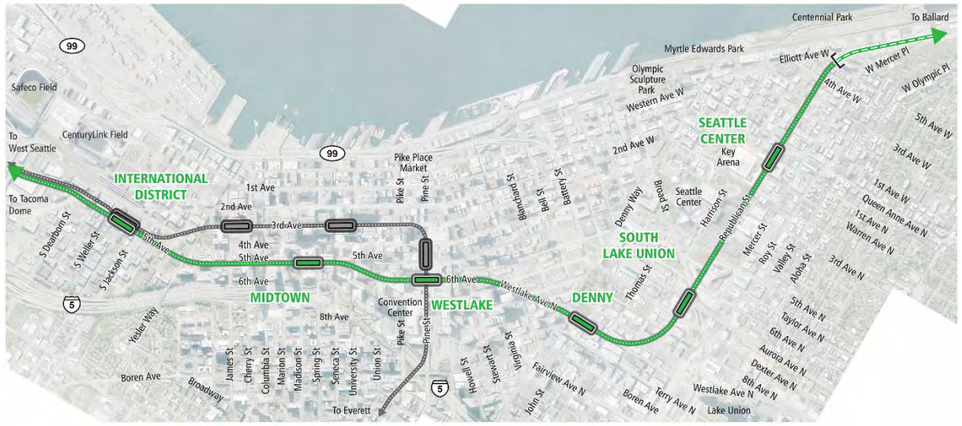


Figure 4-4 Downtown Segment—Level 1 Alternatives

ST3 REPRESENTATIVE PROJECT
ALTERNATIVE

SEGMENT
DOWNTOWN



ROUTE DESCRIPTION

The ST3 Representative Project would operate in a new rail-only tunnel from the International District/ Chinatown to Lower Queen Anne in downtown Seattle. The tunnel route would travel beneath 5th Avenue to Seneca Street, transition to 6th Avenue at University Street, and then turn under Westlake Avenue to John Street. From there, the tunnel route would turn west under Republican Street to Elliott Avenue W. The north tunnel portal would be located near Republican Street and Elliott Avenue W.

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Serves as baseline project against which Level 1 alternatives were defined and screened
- To be potentially refined and evaluated against remaining alternatives in Level 2 Screening

STATIONS

International District/ Chinatown	Tunnel adjacent to existing station under 5th Avenue S for Ballard line
Midtown	Tunnel beneath 5th Avenue between Madison and Spring streets
Westlake	Tunnel beneath 6th Avenue connecting with existing Westlake Station at Pine Street
Denny	Tunnel beneath Westlake Avenue N and John Street
South Lake Union	Tunnel beneath Republican Street between Dexter and Aurora avenues
Seattle Center	Tunnel beneath Republican Street at 1st Avenue N

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Initial travel time estimate of between 7 and 8 minutes for route between International District/Chinatown and Smith Cove stations
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Includes new light rail tunnel through downtown
Connect regional centers	• Serves three regional growth centers (Seattle Central Business District [CBD], South Lake Union, Uptown) • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Constraints include ROW, major utilities and traffic operations • Requires relocation of a major stretch of 72-inch sewer • South Lake Union Station located under State Route (SR) 99 off-ramp • Tunnel portal near International District/Chinatown Station and mining through tie-backs create constructability issues • Tunnel route approximately 16,000 feet long
Expand mobility for all	• All stations located in areas of high access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to International District/Chinatown neighborhood during construction
Encourage equitable and sustainable urban growth	• All six stations located in areas with supportive local land use plans • Minimal bus interaction at International District/Chinatown, Midtown, and Westlake stations • Limited South Lake Union Station bus access to SR 99 • Steep grades east and west of Midtown and Westlake stations
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Potential residential displacements, neighborhood impacts, and impacts to historic properties and a historic district from station and tunnel portal • Traffic and freight could be affected by changes in traffic patterns during construction • Approximately 1,650 acres for development opportunities

5TH AVENUE/HARRISON
ALTERNATIVE

SEGMENT
DOWNTOWN

ROUTE DESCRIPTION

This alternative would also operate in a new rail-only tunnel from the International District/ Chinatown to Lower Queen Anne in downtown Seattle. The tunnel route would run north under 5th Avenue to Westlake Avenue. From there, it would head north along Westlake Avenue to John Street and then turn west beneath Harrison Street to Elliott Avenue W. The north tunnel portal would be located near Harrison Street and Elliott Avenue W.

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Connects to renovated arena

STATIONS

International District/ Chinatown	Tunnel adjacent to existing station under 5th Avenue S for Ballard line
Midtown	Tunnel beneath 5th Avenue between Madison and Spring streets
Westlake	Tunnel beneath 5th Avenue connecting with existing Westlake Station between Pike and Pine streets
Denny	Tunnel beneath Westlake Avenue N between Denny Way and John Street
South Lake Union	Tunnel beneath Harrison Street between Dexter and Aurora avenues
Seattle Center	Tunnel beneath Harrison Street between 1st and Queen Anne avenues

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Includes new light rail tunnel beneath downtown • Potential ridership similar to ST3 Representative Project
Connect regional centers	• Serves three regional growth centers (Seattle CBD, South Lake Union, Uptown) • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Mode, route and general station locations consistent with *ST3 Plan* • Constraints include ROW and traffic operations • Conflicts with 72-inch sewer crossing • Route goes under Key Arena; adds construction complexity with arena expansion/modification • Shorter tunnel route
Expand mobility for all	• All stations located in areas of high access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to International District/Chinatown neighborhood during construction
Encourage equitable and sustainable urban growth	• All six stations located in areas with supportive local land use plans • All six stations located within Urban Centers and/or Villages • Minimal bus interaction at International District/Chinatown, Midtown, and Westlake stations • Better access to SR 99 buses at South Lake Union Station as compared to ST3 Representative Project
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Potential residential displacements, neighborhood impacts, and impacts to historic properties and a historic district from station and tunnel portal • Traffic and freight could be affected by changes in traffic patterns during construction • Approximately 1,650 acres for development opportunities

5TH AVENUE/MERCER
ALTERNATIVE

SEGMENT
DOWNTOWN

ROUTE DESCRIPTION

This alternative would also operate in a new rail-only tunnel from the International District/ Chinatown to Lower Queen Anne in downtown Seattle. The tunnel route would run under 5th Avenue to Westlake Avenue, turn north and continue along Westlake Avenue to John Street. It would then turn west beneath Mercer Street to Elliott Avenue W. The north tunnel portal would be in Kinnear Park near Elliott Avenue W.

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Shifts stations farther apart

STATIONS

International District/ Chinatown	Tunnel adjacent to existing station under 5th Avenue S for Ballard line
Midtown	Tunnel beneath 5th Avenue between Madison and Spring streets
Westlake	Tunnel beneath 5th Avenue connecting with existing Westlake Station between Pike and Pine streets
Denny	Tunnel beneath Westlake Avenue N between Denny Way and John Street
South Lake Union	Tunnel beneath Mercer Street between Dexter and Aurora avenues
Seattle Center	Tunnel beneath Mercer Street between 1st and Queen Anne avenues

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Includes new light rail tunnel beneath downtown • Potential ridership similar to ST3 Representative Project
Connect regional centers	• Serves three regional growth centers (Seattle CBD, South Lake Union, Uptown) • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Mercer Street traffic volumes high with connection to I-5 • Major utility constraints to sewer line beneath Mercer and crossing sewer lines at South Lake Union Station • Tunnel portal at International District/Chinatown Station challenging and mining through Columbia Tower tiebacks creates constructability issues • New Westlake Station difficult to construct • Longer tunnel; approximately 1,800 feet longer than ST3 Representative Project
Expand mobility for all	• All stations located in areas of high access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to International District/Chinatown neighborhood during construction
Encourage equitable and sustainable urban growth	• All six stations located within Urban Centers and/or Villages • Minimal bus interaction at International District/Chinatown, Midtown, and Westlake stations • Limited South Lake Union Station bus access to SR 99
Promote a healthy built, natural, and social environment	• Potential impact to steep slopes and wildlife habitat in Kinnear Park (Section 4(f) resource) • Potential residential displacements from station and tunnel portals • Traffic and freight could be affected by changes in traffic patterns during construction • Potential for some business displacements

6TH AVENUE/BOREN/ROY
ALTERNATIVE

SEGMENT
DOWNTOWN

ROUTE DESCRIPTION

This alternative would also operate in a new rail-only tunnel from the International District/Chinatown to Lower Queen Anne in downtown Seattle. The tunnel route would run under 5th Avenue and transition to 6th Avenue at Yesler Way. It would then continue north under 6th Avenue to Pine Street. The tunnel route would transition to Boren Avenue to John Street and then turn west and follow Roy Street to Elliott Avenue W. The north tunnel portal would be in Kinnear Park near Elliott Avenue W.

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Shifts Denny Station east
- Shifts stations farther apart

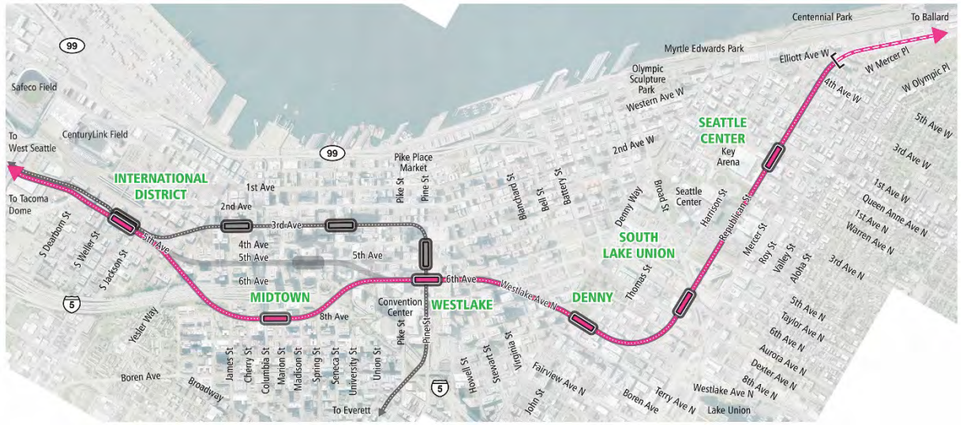
STATIONS

International District/ Chinatown	Tunnel adjacent to existing station under 5th Avenue S for Ballard line
Midtown	Tunnel beneath 6th Avenue between Madison and Spring streets
Westlake	Tunnel beneath 6th Avenue connecting with existing Westlake Station at Pine Street
Denny	Tunnel beneath Boren Avenue at John Street
South Lake Union	Tunnel beneath Roy Street between Dexter and Aurora avenues
Seattle Center	Tunnel beneath Roy Street between 1st and Queen Anne avenues

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Includes new light rail tunnel beneath downtown • Decreased overlap in station areas served slightly increases ridership potential
Connect regional centers	• Serves three regional growth centers (Seattle CBD, South Lake Union, Uptown) • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Potential relocation of 72-inch sewer crossing and requires protection of 84-inch, 48-inch and 176-inch sewers • No need to mine through tie-backs at Columbia Tower but need to construct under WSDOT walls along I-5 • Longer tunnel route; an approximate 2,000-linear foot increase in comparison to ST3 Representative Project
Expand mobility for all	• All stations located in areas of high access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to the International District/Chinatown neighborhood during construction
Encourage equitable and sustainable urban growth	• All six stations located in areas with supportive local land use plans • Five stations located within Urban Centers and/or Villages; one located on border (Seattle Center Station at Roy Street) • Reduced access to buses/streetcar on Westlake, but better access to buses on SR 99 at South Lake Union Station
Promote a healthy built, natural, and social environment	• Potential impact to steep slopes and wildlife habitat in Kinnear Park (Section 4(f) resource) • Potential residential displacements, neighborhood impacts, and impacts to historic properties and a historic district from Station and tunnel portal • Traffic and freight could be affected by changes in traffic patterns during construction

8TH AVENUE/6TH AVENUE/REPUBLICAN
ALTERNATIVE

SEGMENT
DOWNTOWN



ROUTE DESCRIPTION

This alternative would operate in a new rail-only tunnel from the International District/Chinatown to First Hill to Lower Queen Anne in downtown Seattle. From the International District/Chinatown, the tunnel route would run under 5th Avenue, turn northeast under I-5 past Yesler Way, head north under 8th Avenue in First Hill, and then turn back northwest under I-5 to 6th Avenue. It would then head north under 6th Avenue to Westlake Avenue to John Street and then turn west along Republican Street to Elliott Avenue W. The north tunnel portal would be near Republican Street and Elliott Avenue W.

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Shifts Midtown Station to First Hill

STATIONS

International District/ Chinatown	Tunnel adjacent to existing station under 5th Avenue S for Ballard line
Midtown	Tunnel beneath 8th Avenue in First Hill between Columbia and Marion streets
Westlake	Tunnel beneath 6th Avenue connecting with existing Westlake Station at Pine Street
Denny	Tunnel beneath Westlake Avenue N at John Street
South Lake Union	Tunnel beneath Republican Street between Dexter and Aurora avenues
Seattle Center	Tunnel beneath Republican Street between 1st and Queen Anne avenues

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Includes new light rail tunnel beneath downtown • Creates additional passenger loads at International District/Chinatown and Westlake stations, which affects distribution of passengers between two downtown tunnels and spine segmentation • Slight increase in ridership capture area
Connect regional centers	• Serves three regional growth centers (Seattle CBD, South Lake Union, Uptown) • First Hill Station not identified or analyzed in *ST3 Plan* • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Two under-crossings of I-5 present high-risk and construction considerations • Deep tunnel station; approximately 160 feet deep • Tighter curves reduce design speed but operationally comparable to ST3 Representative Project • Unknown soil conditions under I-5 and east of I-5
Expand mobility for all	• All stations located in areas of high access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to the International District/Chinatown neighborhood during construction
Encourage equitable and sustainable urban growth	• Five stations within Urban Centers and/or Villages • Midtown Station located in different Urban Center/Village than designated or analyzed in *ST3 Plan* • First Hill poor connections to north/south bus routes but good connections with Madison bus rapid transit (BRT)
Promote a healthy built, natural, and social environment	• No identified potential impacts to protected natural resources • Potential residential displacements, neighborhood impacts, and impacts to historic properties and a historic district from station and tunnel portal • Traffic and freight could be affected by changes in traffic patterns during construction

5TH AVENUE/ROY/CONSOLIDATED SLU STATION

ALTERNATIVE

SEGMENT
DOWNTOWN

ROUTE DESCRIPTION

This alternative would operate in a new rail-only tunnel from the International District/Chinatown to Lower Queen Anne in downtown Seattle. The tunnel route would run north under 5th Avenue to Westlake Avenue. From there, it would continue under Westlake Avenue and turn west along Roy Street to Elliott Avenue W. The north tunnel portal would be in Kinnear Park near Elliott Avenue W.

STATIONS

International District/ Chinatown	Tunnel adjacent to existing station under 5th Avenue S for Ballard line
Midtown	Tunnel beneath 5th Avenue between Madison and Spring streets
Westlake	Tunnel beneath 5th Avenue connecting with existing Westlake Station between Pike and Pine streets
Denny / South Lake Union	Tunnel beneath Westlake Avenue N; consolidates Denny and SLU stations
South Lake Union	Tunnel beneath Roy Street between 1st and Queen Anne avenues

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Consolidates stations

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project; faster average speed due to one less station
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Includes new light rail tunnel beneath downtown • Consolidation of two stations into one slightly reduces ridership capture area
Connect regional centers	• Serves three regional growth centers (Seattle CBD, South Lake Union, Uptown) • Compatibility with future extensions consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Consolidating stations not identified or analyzed in *ST3 Plan* • New Westlake Station on 5th Avenue directly under existing Westlake Station, making it more challenging to construct; however, removing a station results in less construction issues • Potential relocation of 72-inch sewer crossing and requires protection of 84-inch, 48-inch and 176-inch sewers • Operationally comparable to ST3 Representative Project
Expand mobility for all	• All stations located in areas of high access to opportunity • Route and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to the International District/Chinatown neighborhood during construction
Encourage equitable and sustainable urban growth	• All five stations located in areas with supportive local land use plans • Four stations within Urban Center and/or Villages; one on border (Seattle Center Station at Roy Street) • Consolidated station not as convenient to buses on Denny, Dexter, or SR 99, but bus service can be rerouted
Promote a healthy built, natural, and social environment	• Potential impact to steep slopes and wildlife habitat in Kinnear Park (Section 4(f) resource) • Potential residential displacements, neighborhood impacts, and impacts to historic properties and a historic district from station and tunnel portal • Traffic and freight could be affected by changes in traffic patterns during construction

4.3.1 International District/Chinatown Station Evaluation

At the meeting in May 2018, the ELG requested additional study of options for the International District/Chinatown Station. As such, the following Level 1 alternatives were evaluated for the International District/Chinatown Station:

- 5th Avenue Cut-and-Cover Tunnel/Station (ST3 Representative Project)
- 5th Avenue Bored Tunnel/Cut-and-Cover Station (Massachusetts Tunnel Portal)
- 5th Avenue Bored Tunnel/Mined Station (Massachusetts Tunnel Portal, but with mined station)
- 4th Avenue Cut-and-Cover Tunnel/Station
- 4th Avenue Bored Tunnel/Mined Station
- Union Station Bored Tunnel/Mined Station

These alternatives are delineated on **Figure 4-5** (International District/Chinatown Station in Downtown Segment—Level 1 Alternatives), with individual descriptions and evaluation of each alternative in the pages that follow. Refer to **Appendix C** (Downtown Segment and International District/Chinatown Station Level 1 Evaluation Matrices) for the detailed findings of each evaluation measure in this segment.

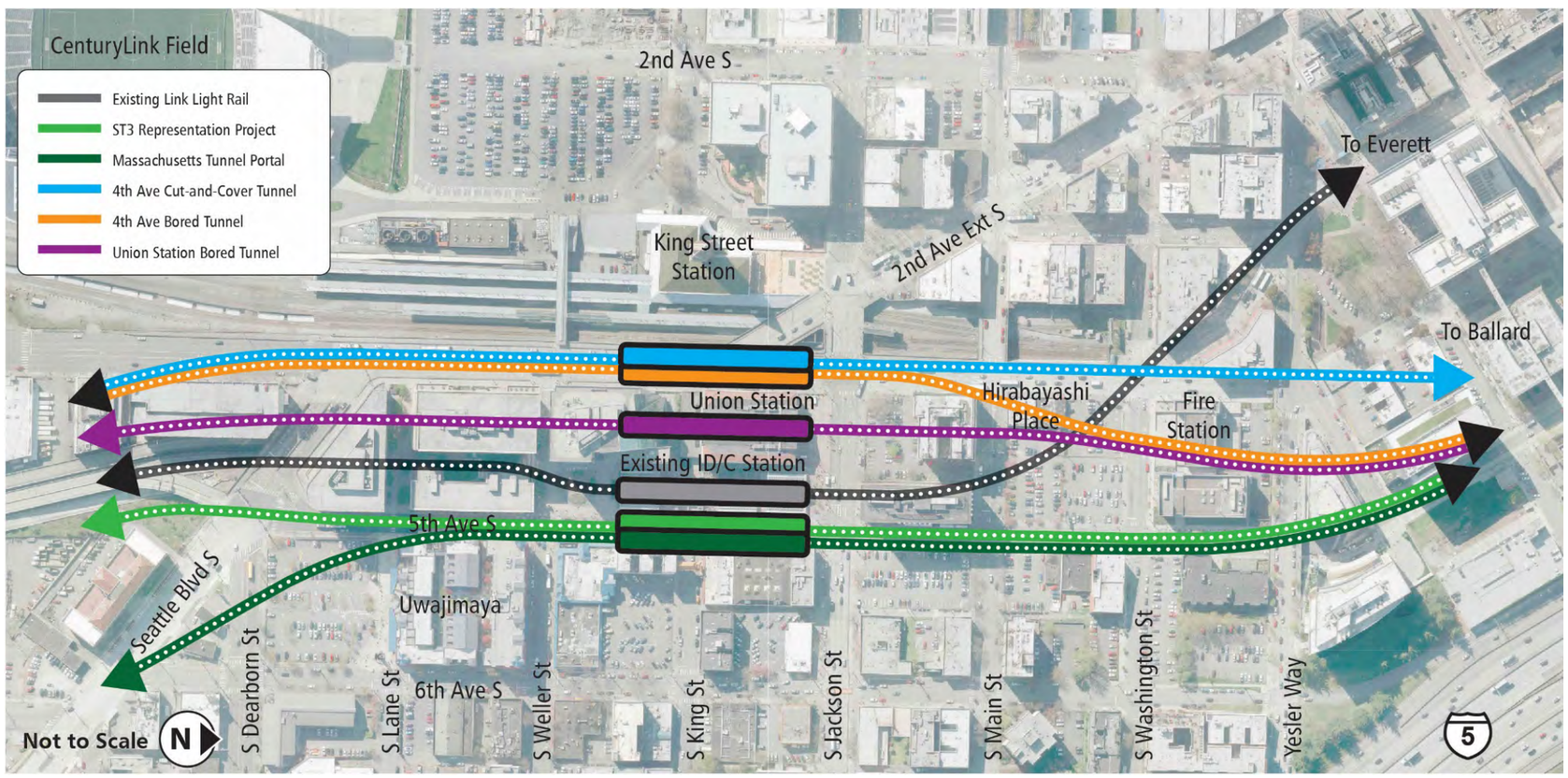


Figure 4-5 International District Chinatown Station in Downtown Segment—Level 1 Alternatives

5TH AVENUE CUT-AND-COVER TUNNEL/STATION

ALTERNATIVE (ST3 Representative Project)

SEGMENT
DOWNTOWN

ROUTE DESCRIPTION

With the ST3 Representative Project, the existing light rail line from Tacoma would transition into a new cut-and-cover tunnel just south of S Royal Brougham Way and travel along the east side of the D-2 ramps carrying the East Link light rail line into a new cut-and-cover station at International District/Chinatown under 5th Avenue S.

STATION

International District/ Chinatown

New cut-and-cover tunnel station adjacent to existing station under 5th Avenue S for Ballard line

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Serves as baseline project against which Level 1 alternatives were defined and screened
- To be potentially refined and evaluated against remaining alternatives in Level 2 Screening

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated
Improve Downtown capacity for regional connectivity	• Facilitates spine segmentation • Includes new light rail tunnel through downtown • Total 2040 population and employment within 0.5-mile buffer of stations approximately 51,300
Connect regional centers	• One regional growth center served (Seattle CBD) • Consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Cut-and-cover tunnel and station design in limited street ROW • Cut-and-cover tunnel in street from Seattle Boulevard S to S Main Street; tunnel boring machine (TBM) portal at S Main Street • Design of connections to existing International District/Chinatown Station with existing pile foundations
Expand mobility for all	• Station located in area of high access to opportunity
Encourage equitable and sustainable urban growth	• Station located in area with supportive local land use plans and Urban Center • Good rail-to-rail integration with existing International District/Chinatown Station
Promote a healthy built, natural, and social environment	• Potential impacts to Chinatown/International District neighborhood during construction • Potential impacts to traffic and truck freight during station construction • Potential for some business displacements and business disruption during construction around station area

5TH AVENUE BORED TUNNEL/CUT-AND-COVER STATION

ALTERNATIVE (Massachusetts Tunnel Portal)

SEGMENT
DOWNTOWN

OUTE DESCRIPTION

With the Massachusetts Tunnel Portal Alternative, the existing light rail line from Tacoma would transition into a new bored tunnel just north of S Massachusetts Street and travel beneath 6th Avenue S to Seattle Boulevard S where it would transition into a new cut-and-cover tunnel station at International District/Chinatown under 5th Avenue S.

STATION

International District/ Chinatown	New cut-and-cover tunnel station adjacent to existing station under 5th Avenue S for Ballard line

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Uses bored tunnel along 6th Avenue S
- Minimizes potential cut-and-cover construction impacts on 5th Avenue S

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project at approximately 51,300
Connect regional centers	• One regional growth center served (Seattle CBD) • Consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Bored and cut-and-cover tunnel and station design in limited street ROW • Design of connections to existing International District/Chinatown Station with existing pile foundations • Pile supported 5th Avenue S retaining wall may require extending cut-and-cover to S Main Street or advance removal of retaining wall
Expand mobility for all	• Station located in area of high access to opportunity
Encourage equitable and sustainable urban growth	• Station located in area with supportive local land use plans and Urban Center • Good rail-to-rail integration with existing International District/Chinatown Station
Promote a healthy built, natural, and social environment	• Reduced impacts to Chinatown/International District neighborhood during construction due to bored tunnel • Potential impacts to traffic and truck freight during station construction • Potential for some business displacements and business disruption during construction around station area

5TH AVENUE BORED TUNNEL/MINED STATION
ALTERNATIVE

SEGMENT
DOWNTOWN

ROUTE DESCRIPTION

The same as the Massachusetts Tunnel Portal Alternative, the existing light rail line from Tacoma would transition into a new bored tunnel just north of S Massachusetts Street and travel beneath 6th Avenue S to Seattle Boulevard S where it would transition to 5th Avenue S. It would then continue in a bored tunnel to a new mined tunnel station at International District/ Chinatown under 5th Avenue S.

STATION

International District/ Chinatown

New mined tunnel station adjacent to existing station under 5th Avenue S for Ballard line

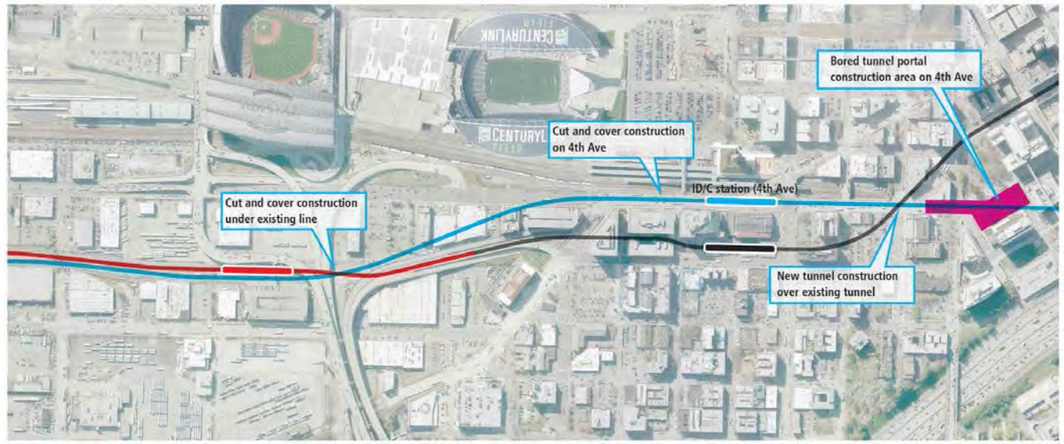
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Uses bored tunnel along 6th Avenue S and transitions to bored tunnel along 5th Avenue S
- Mined tunnel International District/Chinatown Station on 5th Avenue S

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project at approximately 51,300
Connect regional centers	• One regional growth center served (Seattle CBD) • Consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• More challenging engineering issues for deep bored tunnel and mined station • More challenging to design connections from deep mined station to existing International District/Chinatown Station with existing pile foundations • Higher cost due to deep mined station and long vertical access elements
Expand mobility for all	• Station located in area of high access to opportunity
Encourage equitable and sustainable urban growth	• Station located in area with supportive local land use plans and Urban Center • Good rail-to-rail integration with existing International District/Chinatown Station
Promote a healthy built, natural, and social environment	• Reduced impacts to Chinatown/International District neighborhood during construction due to bored tunnel and mined station • Potential impacts to traffic and truck freight during station construction • Potential for some business displacements and business disruption during construction around station area

4TH AVENUE CUT-AND-COVER TUNNEL/STATION
ALTERNATIVE

SEGMENT
DOWNTOWN



ROUTE DESCRIPTION

With this alternative, the existing light rail line from Tacoma would transition into a new cut-and-cover tunnel at approximately S Royal Brougham Way and travel northwest under the West Seattle line and then head north under 4th Avenue S. A new cut-and-cover tunnel station at International District/Chinatown would be constructed under 4th Avenue S. The tunnel would then continue in a cut-and-cover configuration along 4th Avenue S, crossing back over the existing DSTT, and transition to 5th Avenue near James Street.

STATION

International District/ Chinatown

New cut-and-cover tunnel station west of existing station under 4th Avenue S for Ballard line

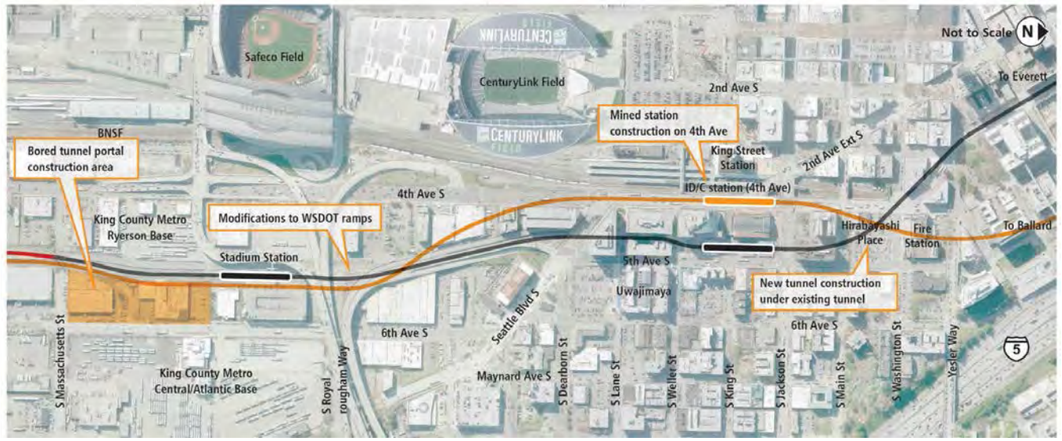
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Uses cut-and-cover tunnel along 4th Avenue S
- Requires reconstruction of existing 4th Avenue S viaduct
- New International District/Chinatown Station would be along 4th Avenue S between Union Station and BNSF tracks

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Total 2040 population and employment within 0.5-mile buffer of stations 4% lower than ST3 Representative Project (approximately 49,000)
Connect regional centers	• One regional growth center served (Seattle CBD) • Consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• More challenging and higher cost due to 4th Avenue S viaduct rebuild • More challenging due to new tunnel crossing existing light rail guideway twice • Longer in-street cut-and-cover tunnel on heavily traveled arterial • Includes modifications to I-90 ramps • Challenging to design connections from new station to King Street Station and International District/Chinatown Station with existing pile foundations under Union Station
Expand mobility for all	• Station located in area of high access to opportunity • Potential improvement to rail-to-rail integration with commuter rail, but potentially degraded integration with International District/Chinatown Station
Encourage equitable and sustainable urban growth	• Station located in area with supportive local land use plans and Urban Center • Good rail-to-rail integration with existing International District/Chinatown Station
Promote a healthy built, natural, and social environment	• Reduced impacts to Chinatown/International District neighborhood during construction offset by increased traffic due to re-routed 4th Avenue S traffic • Increased truck freight mobility impacts during construction due to re-routed 4th Avenue S • Degraded access to businesses during construction due to re-routed 4th Avenue S

4TH AVENUE BORED TUNNEL/MINED STATION
ALTERNATIVE

SEGMENT
DOWNTOWN



ROUTE DESCRIPTION

With this alternative, the existing light rail line from Tacoma would transition into a new bored tunnel at approximately S Massachusetts Street and travel under S Royal Brougham Way, requiring modification to the existing WSDOT ramps. It would then travel to the northwest under the West Seattle line and then head north under 4th Avenue S. A new mined tunnel station at International District/Chinatown would be constructed under 4th Avenue S. The bored tunnel would then continue along 4th Avenue S, crossing back under the existing DSTT and transition to 5th Avenue near James Street.

STATION

International District/ Chinatown

New mined tunnel station west of existing station under 4th Avenue S for Ballard line

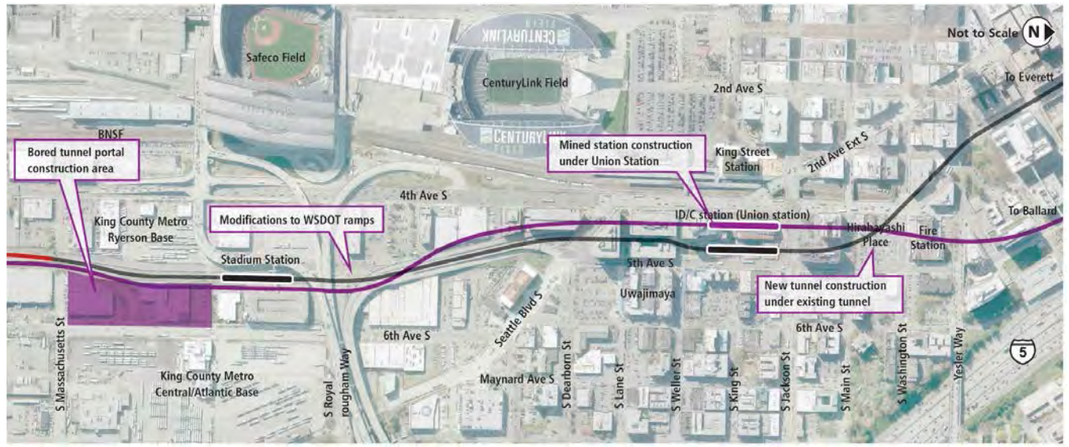
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Uses bored tunnel along 4th Avenue S
- Requires reconstruction of existing 4th Avenue S viaduct
- New International District/Chinatown Station would be along 4th Avenue S between Union Station and BNSF tracks

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Total 2040 population and employment within 0.5-mile buffer of stations 4% lower than ST3 Representative Project (approximately 49,000)
Connect regional centers	• One regional growth center served (Seattle CBD) • Consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• More challenging and higher cost due to 4th Avenue S viaduct rebuild and longer bored tunnel • More challenging due to new tunnel crossing existing light rail guideway twice • Includes modifications to I-90 ramps • Challenging to design connections from new station to King Street Station and International District/Chinatown Station with existing pile foundations under Union Station
Expand mobility for all	• Station located in area of high access to opportunity
Encourage equitable and sustainable urban growth	• Station located in area with supportive local land use plans and Urban Center • Potential improvement to rail-to-rail integration with commuter rail, but potentially degraded integration with International District/Chinatown Station
Promote a healthy built, natural, and social environment	• Reduced impacts to Chinatown/International District neighborhood during construction offset by increased traffic due to re-routed 4th Avenue S traffic • Increased truck freight mobility impacts during construction due to re-routed 4th Avenue S • Degraded access to businesses during construction due to re-routed 4th Avenue S

UNION STATION BORED TUNNEL/MINED STATION
ALTERNATIVE

SEGMENT
DOWNTOWN



ROUTE DESCRIPTION

With this alternative, the existing light rail line from Tacoma would transition into a new bored tunnel at approximately S Massachusetts Street and travel under S Royal Brougham Way, requiring modification to the existing WSDOT ramps. It would then travel to the northwest under the West Seattle line and then head north under Union Station. A new mined tunnel station at International District/Chinatown would be constructed under Union Station. The bored tunnel would then cross back under the existing DSTT and transition to 5th Avenue near James Street.

STATION

International District/ Chinatown

New mined tunnel station under existing Union Station for Ballard line

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Uses bored tunnel between 4th Avenue S and 5th Avenue S, under Union Station
- New International District/Chinatown Station would be under Union Station

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Total 2040 population and employment within 0.5-mile buffer of stations 3% lower than ST3 Representative Project (approximately 49,900)
Connect regional centers	• One regional growth center served (Seattle CBD) • Consistent with Sound Transit's RTLP
Technically feasible and financially sustainable	• Feasibility issues with design of deep mined station under Union Station and protection of landmark historic structure • More challenging due to new tunnel crossing existing light rail guideway twice • Includes modifications to I-90 ramps • Feasibility issue with design of connections from new station to King Street Station and International District/Chinatown Station with existing pile foundations under Union Station
Expand mobility for all	• Station located in area of high access to opportunity
Encourage equitable and sustainable urban growth	• Station located in area with supportive local land use plans and Urban Center • Potential improvement to rail-to-rail integration with commuter rail, but potentially degraded integration with International District/Chinatown Station
Promote a healthy built, natural, and social environment	• Reduced impacts to Chinatown/International District neighborhood during construction • Reduced impacts to traffic and truck freight during station construction than with the 4th Avenue S alternatives • Potential for some business displacements and business disruption during construction around station area

4.3.2 Downtown Segment Summary Findings

Constructability, construction complexity, and transit capacity are three key themes that emerged from the Level 1 Screening. The construction of any new transit project beneath downtown Seattle presents substantial challenges given the dense development patterns and land use intensities. Different tunnel types, structural elements of existing buildings (particularly high-rise office buildings but also retaining walls and building tie-backs), soil conditions, buried utilities, anticipated transit passenger volumes, and maintaining accessibility to downtown during construction of the Project are difficult challenges for any alternative. These and other challenges will be evaluated further during the Level 2 Screening.

Table 4-3 (Downtown Segment ELG Screening Recommendations) identifies the alternatives recommended by the ELG to be carried forward for additional design and screened as part of the Level 2 Screening. **Table 4-4** (International District/Chinatown Station ELG Screening Recommendations) lists the ELG's screening recommendations for the International District/Chinatown Station alternatives. Additional evaluation information and results for the Downtown alternatives may be found in **Appendix C** (Downtown Segment and International District/Chinatown Station Level 1 Evaluation Matrices), including the additional International District/Chinatown Station alternatives.

Table 4-3 Downtown Segment ELG Screening Recommendations

Level 1 Alternative	Notes/Comments	Carry Forward into Level 2?
ST3 Representative Project	• Baseline project	Yes
5th/Harrison	• Avoids utility conflicts on Republican and station under SR 99 off-ramp • Decreased station coverage; consider moving Denny Station south	Yes
6th/Boren/Roy	• Avoids utility conflicts on Republican and station under SR 99 off-ramp • Increases construction risk due to I-5 walls along 6th Avenue, but avoids tie-backs on 5th Avenue	Yes
5th/Mercer	• Avoids utility conflicts on Republican and station under SR 99 off-ramp • Increases construction risk due to large sewer beneath Mercer	No
5th/Roy/Consolidated SLU Station	• Avoids utility conflicts on Republican and station under SR 99 off-ramp • Consolidating stations not identified or analyzed in *ST3 Plan*	No
8th/6th/Republican	• Increases construction risk due to two crossings under I-5 • First Hill Station not identified or analyzed in *ST3 Plan*	No
Use existing DSTT	• Existing DSTT has capacity constraints	No
Design for potential extensions to north and/or east	• Extensions to north and/or east not identified or analyzed in *ST3 Plan*	No
Track interlining	• Requires grade-separated junctions; does not accommodate buses on E3 busway • Creates bottleneck; impacts service reliability and limits system capacity	No
Extended Ballard line	• Rebuild of S Forest Street junction requires disruption of existing LRT service • Deep mined International District/Chinatown Station; constructability challenges • Additional guideway length; no track connections	No

Table 4-4 International District/Chinatown Station ELG Screening Recommendations

Level 1 Alternative	Notes/Comments	Carry Forward into Level 2?
5th Avenue Cut-and-Cover Tunnel/Station (ST3 Representative Project)	• Same as ST3 Representative Project • Baseline for comparison	Yes
5th Avenue Bored Tunnel/Cut-and-Cover Station (Massachusetts Tunnel Portal)	• Same as Massachusetts Tunnel Portal • Reduces extent of cut-and-cover construction impacts	Yes
5th Avenue Bored Tunnel/Mined Station	• Reduces extent of cut-and-cover construction impacts • Deep mined station construction technically challenging (platform 100 to 120 feet deep)	Yes
4th Avenue Cut-and-Cover Tunnel/Station	• 4th Avenue S viaduct rebuild; potential major traffic, freight, and transit mobility impacts • Construction detours could impact neighborhood streets • 4th Avenue S viaduct rebuild; requires funding partnerships • LRT service disruptions during construction over existing tunnel • Constructability challenge of tunneling under I-90 ramps	Yes
4th Avenue Bored Tunnel/Mined Station	• 4th Avenue S viaduct rebuild (at station); potential traffic, freight, and transit mobility impacts • Construction detours could impact neighborhood streets • Deep mined station construction under 4th Ave (platform 150 to 200 feet deep) • Property impacts of TBM portal site in E3 busway	Yes
Union Station Bored Tunnel/Mined Station	• Deep piles under Union Station, existing International District/Chinatown Station and adjacent buildings require deep mined station (platform 150 to 200 feet deep) • Deep station precludes easy pedestrian connections to International District/Chinatown and King Street stations • Risk of settlement damage to landmark US building • Lacks construction staging and access shaft sites	No

4.4 Interbay/Ballard Segment Alternatives Evaluation

The Interbay/Ballard Segment contained the following seven alternatives during the Level 1 Screening:

- ST3 Representative Project (Elliott/15th/Movable Bridge)
- Elliott/15th/16th/Fixed Bridge
- West of BNSF/20th/17th/Fixed Bridge
- West of BNSF/20th/17th/Tunnel
- East of BNSF/14th/Movable Bridge
- Elliott/Armory Way/14th/Tunnel
- West of BNSF/20th/Tunnel

These alternatives are delineated on **Figure 4-6** (Interbay/Ballard Segment—Level 1 Alternatives), with individual descriptions and evaluation of each alternative in the pages that follow. Refer to **Appendix D** (Interbay/Ballard Segment Level 1 Evaluation Matrices) for the detailed findings of each evaluation measure in this segment.

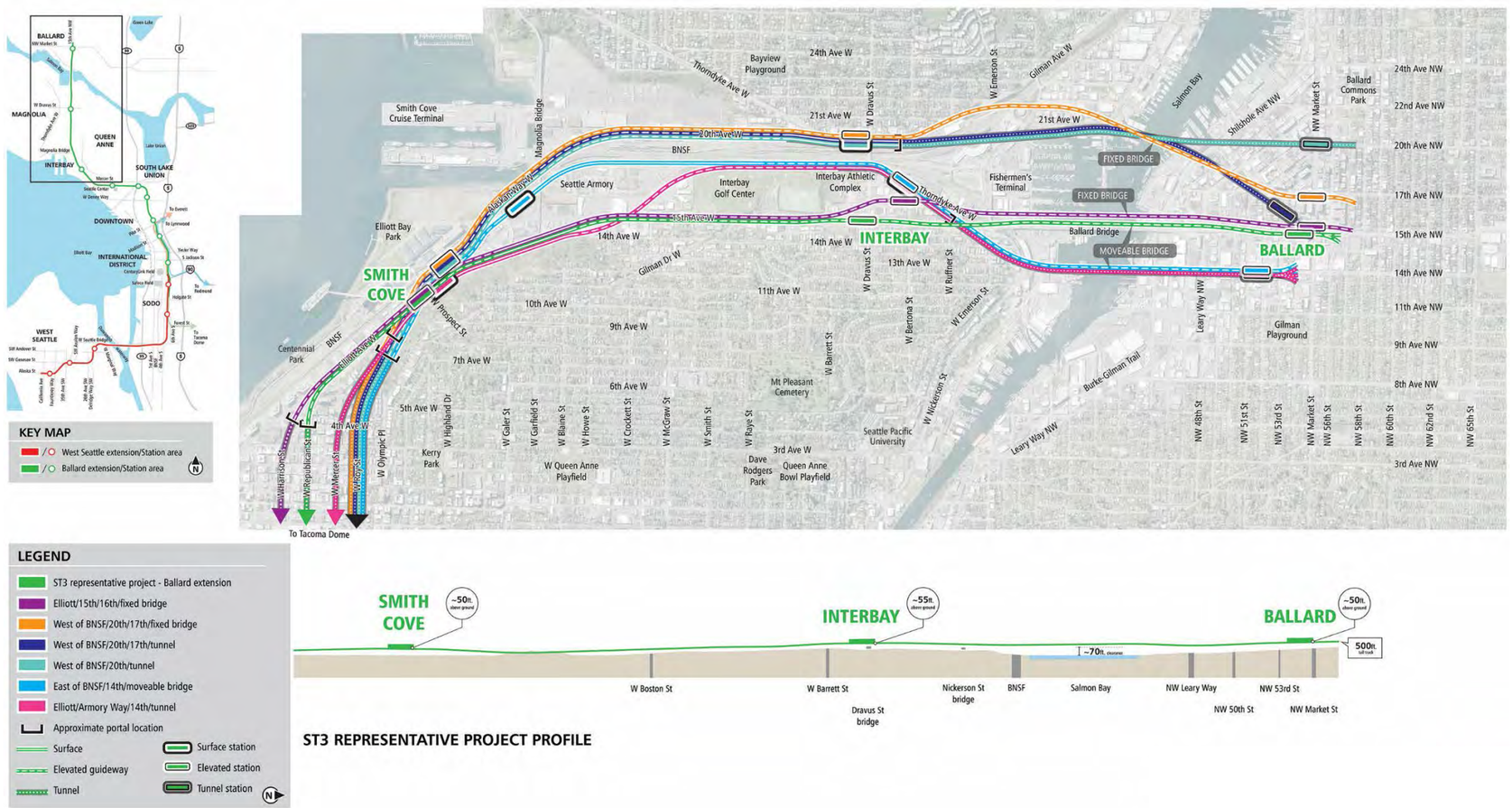


Figure 4-6 Interbay/Ballard Segment—Level 1 Alternatives

ST3 REPRESENTATIVE PROJECT
ALTERNATIVE

SEGMENT
INTERBAY/BALLARD

ROUTE DESCRIPTION

The ST3 Representative Project would emerge from the downtown tunnel at W Republican Street in an elevated structure. The elevated route would then transition to an at-grade guideway between the Queen Anne hillside and Elliott Avenue W, to 15th Avenue W at W Armory Way. North of W Armory Way, it would transition to an elevated structure, travel down 15th Avenue W and cross over Salmon Bay via a movable bridge west of the existing Ballard Bridge. Once across Salmon Bay, the elevated route would follow 15th Avenue NW and end near 15th Avenue NW and NW Market Street.

STATIONS

Smith Cove — Elevated on Elliott Avenue W

Interbay — Elevated on 15th Avenue W straddling Dravus Street Bridge

Ballard — Elevated on 15th Avenue NW south of NW Market Street

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Serves as baseline project against which Level 1 alternatives were defined and screened
- To be potentially refined and evaluated against remaining alternatives in Level 2 Screening

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated • Initial travel time estimate of 5 minutes for route between Smith Cove and Ballard stations
Improve Downtown capacity for regional connectivity	• Facilitates regional connectivity
Connect regional centers	• Serves Ballard-Interbay MIC • Elevated station on a north-south route at NW Market Street; a connected eastward extension per Sound Transit's RTLP could involve greater surface disruption, while an independent extension could cause more modest disruption
Technically feasible and financially sustainable	• Engineering constraints such as overhead distribution power poles, column construction in roadway median • Constrained construction of movable bridge would be in close proximity to existing bridge • Movable bridge clearance assumed at approximately 70 feet with majority of vessels passing without bridge opening; however, bridge opening would impact system-wide operations • Deep drilled shaft foundations at south bank of Salmon Bay in liquefiable soils
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Interbay Station located near Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth	• Recent planning efforts at Ballard Station include Urban Design and Transportation Framework and multimodal transportation plan (Move Ballard), both developed in anticipation of light rail • Ballard and Smith Cove stations border Urban Villages/Centers; Interbay Station is not with an Urban Village/Center
Promote a healthy built, natural, and social environment	• Piers in Salmon Bay would require permits and mitigation for potential impacts to waters of the United States, fish habitat, commercial fishing, subsistence fishing, and tribal treaty fishing • Within 1,000-foot methane buffer for Interbay abandoned landfill (Seattle ECA) • Crosses over Ship Canal Trail • Piers in Salmon Bay could require changes in navigation

ELLIOTT/15TH/16TH/FIXED BRIDGE
ALTERNATIVE

SEGMENT
INTERBAY/BALLARD

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at W Harrison Street on an elevated structure and transition to an at-grade guideway between the Queen Anne hillside and Elliott Avenue W. North of W Armory Way, the route would continue on an elevated structure down 15th Avenue W to W Barrett Street. From there, it would turn west over W Dravus Street and 16th Avenue W and then span Salmon Bay on a fixed bridge west of the existing Ballard Bridge. North of Salmon Bay, the elevated route would parallel 15th Avenue NW and end near 15th Avenue NW and NW Market Street.

STATIONS

Smith Cove	Elevated on Elliott Avenue W
Interbay	Elevated on 16th Avenue W south of W Bertona Street
Ballard	Elevated west of 15th Avenue NW straddling NW Market Street

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Shifts farther from existing Ballard Bridge
- Avoids 15th Avenue W

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Reliability of fixed bridge supports carrying capacity in downtown
Connect regional centers	• Serves Ballard-Interbay MIC • Mode, route and general station locations consistent with *ST3 Plan*
Technically feasible and financially sustainable	• Engineering constraints similar to ST3 Representative Project • Location of elevated waterway crossing farther away from existing Ballard Bridge • Less construction complexity of guideway north of Salmon Bay outside of 15th Avenue NW
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Interbay Station located near Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth	• Recent planning efforts at Ballard Station include Urban Design and Transportation Framework and multimodal transportation plan (Move Ballard), both developed in anticipation of light rail • Ballard and Smith Cove stations border Urban Villages/Centers; Interbay Station is not with an Urban Village/Center • Provides potentially better bus/rail integration at Interbay Station but requires route diversion
Promote a healthy built, natural, and social environment	• Piers in Salmon Bay would require permits and mitigation for potential impacts to waters of the United States, fish habitat, commercial fishing, subsistence fishing, and tribal treaty fishing • Potential for use of Interbay Athletic Complex (Section 4(f) resource) • Crosses over Ship Canal Trail

WEST OF BNSF/20TH/17TH/FIXED BRIDGE
ALTERNATIVE

SEGMENT
INTERBAY/BALLARD

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel on an elevated guideway at W Roy Street and then span over Elliott Avenue W. It would continue north, crossing over to the west side of the BNSF tracks and above Magnolia Bridge. Paralleling 20th and Gilman avenues W, the elevated route would eventually turn northeast and cross over the BNSF railroad tracks near 22nd Avenue W. South of Salmon Bay, the elevated route would transition to a fixed bridge near NW Dock Place. Once across Salmon Bay, the elevated route would end near 17th Avenue NW and NW Market Street.

STATIONS

Smith Cove	Elevated immediately northeast of BNSF railroad tracks
Interbay	Elevated on 20th Avenue W south of W Dravus Street
Ballard	Elevated on 17th Avenue NW straddling NW Market Street

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Avoids Elliott Avenue W and 15th Avenue W
- Uses 20th Avenue W

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Reliability of fixed bridge supports carrying capacity in downtown
Connect regional centers	• Serves Ballard-Interbay MIC
Technically feasible and financially sustainable	• Avoids Elliott Avenue W and 15th Avenue W/NW • Constrained width between BNSF railroad and properties along west side of Elliott Avenue W • Long span crossings of BNSF railroad • Elevated structure with deep shafts in liquefiable soils near Magnolia Bridge • Potentially greater property takes
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth	• Ballard Station more centrally located within Ballard Hub Urban Village than ST3 Representative Project • Bus/rail integration at Smith Cove and Ballard stations similar to ST3 Representative Project • Pedestrian and bicycle access opportunities at Interbay Station similar to ST3 Representative Project
Promote a healthy built, natural, and social environment	• Piers in Salmon Bay would require permits and mitigation for potential impacts to waters of the United States, fish habitat, commercial fishing, subsistence fishing, and tribal treaty fishing • Crosses over Ship Canal Trail • Majority of route within potential liquefaction area (Seattle ECA) • Avoids West Queen Anne greenbelt habitat and steep slopes

WEST OF BNSF/20TH/17TH/TUNNEL
ALTERNATIVE

SEGMENT
INTERBAY/BALLARD

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at W Roy Street and then transition to an elevated structure. The elevated route would cross Elliott Avenue W and run west of the BNSF railroad tracks. It would then cross over Magnolia Bridge and continue adjacent to 20th Avenue W. North of W Dravus Street, the route would transition into a tunnel under Salmon Bay. The tunnel route would head east on the north shoreline of the bay and end near 15th Avenue NW and NW Market Street.

STATIONS

Smith Cove — Elevated immediately northeast of BNSF railroad tracks

Interbay — Retained cut (trench) on 20th Avenue W south of W Dravus Street

Ballard — Tunnel east of 17th Avenue NW south of NW Market Street

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Avoids Elliott Avenue W and 15th Avenue W
- Uses 20th Avenue W
- Crosses Salmon Bay in a tunnel
- Places Ballard Station below ground at 15th/17th avenues NW

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Reliability of tunnel supports carrying capacity in downtown
Connect regional centers	• Serves Ballard-Interbay MIC • Station location and northeasterly orientation reduces length of a connected or independent extension
Technically feasible and financially sustainable	• Tunnel facilitates reliable system operations; requires less special trackwork • Constrained width of ROW between Port of Seattle and BNSF railroad properties north of Magnolia Bridge • Large diameter combined sewer overflow (CSO) in Shilshole Avenue NW • Elevated structure with deep shafts in liquefiable soils near Magnolia Bridge • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth	• Ballard Station more centrally located within Ballard Hub Urban Village than ST3 Representative Project • Bus/rail integration at Smith Cove and Ballard stations similar to ST3 Representative Project; potentially limited bus/rail integration at Interbay Station • Pedestrian/bicycle access opportunities at Interbay Station similar to ST3 Representative Project
Promote a healthy built, natural, and social environment	• Avoids in water work and associated permits • Majority of route within potential liquefaction area (Seattle ECA) • Avoids crossing over Section 4(f)/6(f) resources • Potential for contamination along most of corridor (historic industrial uses both on land and in water) • Fewer potential business displacements in Ballard

EAST OF BNSF/14TH/MOVABLE BRIDGE

ALTERNATIVE

SEGMENT
INTERBAY/BALLARD

ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at W Roy Street and then cross Elliott Avenue W via an elevated structure. The route would transition to grade, traveling under the W Galer and Magnolia bridges, eventually heading north to the east side of the BNSF railroad tracks. The route would again transition to an elevated structure passing above W Dravus Street. It would continue north, cross over the 15th Avenue W and W Emerson Street intersection and align with 14th Avenue NW to span Salmon Bay via a movable bridge. North of Salmon Bay, the elevated route would continue along 14th Avenue NW, ending south of NW Market Street.

STATIONS

Smith Cove — At-grade immediately northeast of BNSF railroad tracks south of Magnolia Bridge

Interbay — Elevated on Thorndyke Avenue W north of W Dravus Street

Ballard — Elevated on 14th Avenue NW south of NW Market Street between NW 51st and NW 53rd streets

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

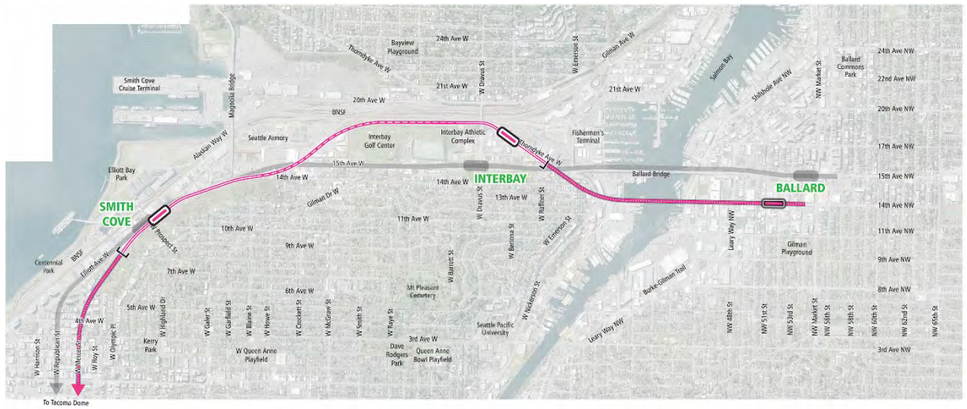
- Avoids Elliott Avenue W and 15th Avenue W
- Uses area east of BNSF railroad tracks
- Avoids Fishermen's Terminal
- Uses 14th Avenue NW, which has wide right-of-way

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with movable bridge • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Comparable to ST3 Representative Project with movable bridge
Connect regional centers	• Serves Ballard-Interbay MIC • Ballard Station location results in less surface impact and reduces length of an elevated extension compared to ST3 Representative Project; however, an independent extension could require more surface disruption than ST3 Representative Project to co-locate stations
Technically feasible and financially sustainable	• Movable bridge would affect system operations; requires special trackwork for movable bridge • Engineering constraints include existing Interbay pump station and large diameter CSO; BNSF railroad and landfill • Ground improvements for liquefiable soils in Interbay • Guideway under Magnolia Bridge could require partial bridge reconstruction
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth	• Stations located outside of designated Urban Centers/Villages • Pedestrian and bicycle access more limited than ST3 Representative Project at Interbay Station • More land zoned Manufacturing/Industrial (over 250 acres more than ST3 Representative Project)
Promote a healthy built, natural, and social environment	• Piers in Salmon Bay would require permits and mitigation for potential impacts to waters of the United States, fish habitat, commercial fishing, subsistence fishing, and tribal treaty fishing • Crosses over Ship Canal Trail • Crosses over 14th Avenue NW Boat Ramp (Section 4(f)/6(f) resources) • Potential disturbance of old Interbay landfill

ELLIOTT/ARMORY WAY/14TH/TUNNEL

ALTERNATIVE

SEGMENT
INTERBAY/BALLARD



ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at W Mercer Street, paralleling Elliott Avenue W. The route would transition to an elevated structure along the Queen Anne hillside to 15th Avenue W and W Armory Way, crossing over the intersection. It would then run on the east side of the BNSF railroad tracks, pass under W Dravus Street and then curve east between the railroad tracks and 15th Avenue W. The route would then descend into a tunnel beneath Salmon Bay and continue to a terminus near 14th Avenue NW and NW Market Street.

STATIONS

Smith Cove — At-grade east of Elliott Avenue W

Interbay — Retained cut (trench) on Thorndyke Avenue W north of W Dravus Street

Ballard — Tunnel under 14th Avenue NW south of NW Market Street between NW 51st and NW 53rd streets

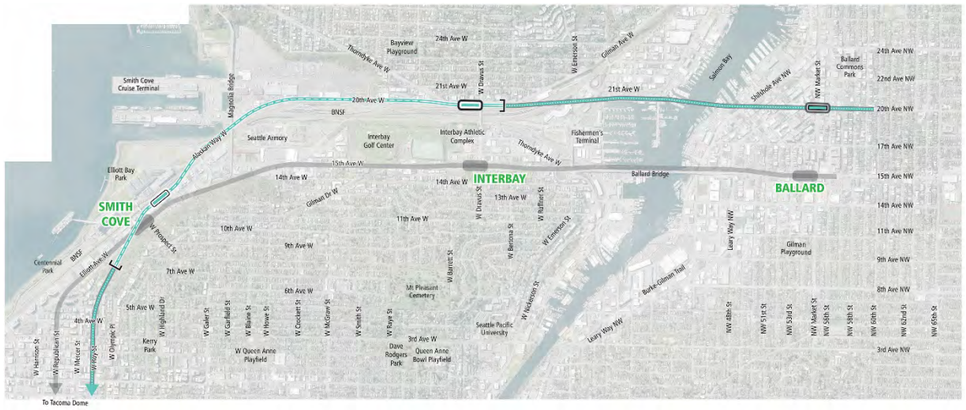
CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Avoids Elliott Avenue W and 15th Avenue W
- Uses W Armory Way
- Runs east of existing tracks
- Avoids Fishermen's Terminal
- Crosses Salmon Bay in a tunnel
- Uses 14th Avenue NW, which has wide right-of-way
- Places Ballard Station below ground

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Reliability of tunnel supports carrying capacity in downtown
Connect regional centers	• Serves Ballard-Interbay MIC • Ballard Station location reduces length of a connected extension; logistics of an independent extension similar to ST3 Representative Project
Technically feasible and financially sustainable	• Tunnel facilitates reliable system operations; requires less special trackwork • Route constrained between BNSF railroad tracks and large diameter sewer • Ground improvements for liquefiable soils in Interbay • Tunnel crossing avoids in-water work • Total length of route approximately 1,600 linear feet shorter than ST3 Representative Project • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth	• Stations located outside of designated Urban Centers/Villages • Provides potentially better bus/rail integration at Interbay station but requires route diversion • More land zoned Manufacturing/Industrial (over 100 acres more than ST3 Representative Project)
Promote a healthy built, natural, and social environment	• Potential disturbance of old Interbay landfill • Avoids crossing over Section 4(f)/6(f) resources • Avoids potential impacts to 15th Avenue W and 15th Avenue NW • Avoids potential impacts to freight vessels • Avoids potential direct impacts on Fishermen's Terminal

WEST OF BNSF/20TH/TUNNEL
ALTERNATIVE

SEGMENT
INTERBAY/BALLARD



ROUTE DESCRIPTION

This alternative would emerge from the downtown tunnel at W Roy Street and then transition to an elevated structure. It would cross over Elliott Avenue W and run west of the BNSF railroad tracks. The elevated route would cross over Magnolia Bridge and continue adjacent to 20th Avenue W. Immediately north of W Dravus Street, the route would transition into a tunnel under Salmon Bay. North of Salmon Bay, the route would continue in a tunnel beneath 20th Avenue NW, with the tail tracks terminating near NW 60th Street.

STATIONS

Smith Cove — Elevated immediately northeast of BNSF railroad tracks

Interbay — Retained cut (trench) on 20th Avenue W south of W Dravus Street

Ballard — Tunnel under intersection of 20th Avenue NW and NW Market Street

CHANGES TO ST3 REPRESENTATIVE PROJECT BASED ON AGENCY AND PUBLIC COMMENTS

- Avoids Elliott Avenue W and 15th Avenue W
- Uses 20th Avenue W
- Crosses Salmon Bay in a tunnel
- Shifts Ballard Station farther west

Purpose and Need	Evaluation
Service performance and reliability in project corridor	• Fully grade separated with no movable bridge • Travel time comparable to ST3 Representative Project
Improve Downtown capacity for regional connectivity	• Reliability of tunnel supports carrying capacity in downtown
Connect regional centers	• Serves Ballard-Interbay MIC • Tunnel profile reduces surface impact, but route location could require a longer future extension, potentially adding travel time and complexity
Technically feasible and financially sustainable	• Tunnel facilitates reliable system operations; requires less special trackwork • Constrained width between BNSF railroad and properties along west side of Elliott Avenue W • Elevated structure with deep shafts in liquefiable soils near Magnolia Bridge • Large diameter CSO in Shilshole Avenue NW and King County Siphon crossing under Salmon Bay • Long span bridge crossing of BNSF railroad • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for all	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth	• Ballard Station more centrally located within Ballard Hub Urban Village than ST3 Representative Project • Pedestrian and bicycle access opportunities at Interbay Station similar to ST3 Representative Project • Potentially limited bus/rail integration at Interbay and Ballard stations
Promote a healthy built, natural, and social environment	• Avoids West Queen Anne greenbelt habitat and steep slope • Avoids crossing over Section 4(f)/6(f) trails • Avoids potential residential displacements in Ballard • Avoids potential impacts to 15th Avenue W and 15th Avenue NW • Avoids potential changes in navigation in Salmon Bay

4.4.1 Interbay/Ballard Segment Summary Findings

While construction complexity is a unifying theme across each segment, the key themes that emerged from the Level 1 Screening in the Interbay/Ballard Segment also included property acquisition, mobility, and economic effects. Environmental effects, particularly around land uses associated with commercial fishing and the Interbay industrial lands, and tribal treaty fishing in Salmon Bay are also themes for certain alternatives based on their initial locations. As the evaluation of alternatives advances to the Level 2 Screening, additional design work and investigation into these and other themes or specific issues will provide greater detail on the feasibility of each alternative.

Table 4-5 (Interbay/Ballard Segment ELG Screening Recommendations) identifies the alternatives recommended by the ELG to be carried forward for additional design and screened as part of the Level 2 Screening. Additional evaluation information and results for the Interbay/Ballard alternatives may be found in **Appendix D** (Interbay/Ballard Segment Level 1 Evaluation Matrices).

Table 4-5 Interbay/Ballard Segment ELG Screening Recommendations

Level 1 Alternative	Notes/Comments	Carry Forward into Level 2?
ST3 Representative Project	• Baseline project	Yes
Elliott/15th/16th/Fixed Bridge	• Avoids 15th Avenue W and W Dravus Street interchange • Supports more reliable service; no bridge openings	Yes
West of BNSF/ 20th/17th/Fixed Bridge	• Avoids Elliott Avenue W, 15th Avenue W, and Fishermen's Terminal • Supports more reliable service	Yes
East of BNSF/ 14th/Movable Bridge	• Avoids Elliott Avenue W, 15th Avenue W, and Fishermen's Terminal • Locates station on 14th Avenue NW within industrial area	Yes
West of BNSF/ 20th/17th/Tunnel	• Avoids Elliott Avenue W, 15th Avenue W, Fishermen's Terminal and Salmon Bay • Requires tunnel; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships	Yes
Elliott/Armory Way/ 14th/Tunnel	• Avoids Elliott Avenue W, 15th Avenue W, Fishermen's Terminal and Salmon Bay • Locates station on 14th Avenue NW within industrial area • Requires tunnel; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships	Yes
West of BNSF/ 20th/Tunnel	• Avoids Elliott Avenue W, 15th Avenue W, Fishermen's Terminal and Salmon Bay • Requires longer tunnel; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships • Requires construction and displacement within Ballard core	No
Tunnel through Queen Anne/Interbay	• Depth and length impractical; would affect downtown tunnel depth	No
Extensions to 65th, 85th, Northgate	• Extensions not identified or analyzed in *ST3 Plan*	No
Multimodal Salmon Bay bridge	• Multimodal bridge not identified or analyzed in *ST3 Plan*	No
Eliminate or add stations	• Eliminating, consolidating or adding stations not identified or analyzed in *ST3 Plan*	No

NOTES:
(1) Bridge alternatives do not preclude pedestrian/bicycle paths.

5 SUMMARY OF LEVEL 1 SCREENING RECOMMENDATIONS

In summary, the Level 1 alternatives addressed a variety of different challenges and opportunities, and the evaluation highlighted potential benefits or impacts associated with each alternative. The Level 1 Screening also identified key themes and issues to consider moving forward into Level 2. For the alternatives carried forward into the Level 2 Screening, additional design efforts will be conducted to refine those alternatives that remain, and to provide additional detail on potential benefits or impacts of each alternative.

This technical memorandum presents the Level 1 Screening recommendations that the ELG made on May 17, 2018 and July 19, 2018. The recommendations include the alternatives carried forward into Level 2 for further refinement and evaluation, as well as the Level 1 alternatives not carried forward into Level 2.

5.1 Alternatives Carried Forward into Level 2

Table 5-1 (Summary of Level 1 Alternatives Carried Forward into Level 2) lists the 20 recommended Level 1 alternatives that the ELG recommended be carried forward into the Level 2 Screening process. In all cases, the ST3 Representative Project is carried forward into Level 2, but modifications will be considered to resolve technical challenges and community concerns associated with the ST3 Representative Project. The remaining alternatives in each of the study segments will also be refined to address the comments discussed with the SAG, ELG and other stakeholders, as listed in **Table 5-1**.

Table 5-1 Summary of Level 1 Alternatives Carried Forward into Level 2

Segment / Level 1 Alternative	Notes / Comments
West Seattle/Duwamish Segment	
ST3 Representative Project	• Baseline project (South of West Seattle Bridge)
Pigeon Ridge/West Seattle Tunnel	• Lessens effects to Port of Seattle, Alaska Junction, Delridge • Better orientation for future southern extension • Requires two tunnels; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships
Oregon Street/Alaska Junction	• Avoids Fauntleroy and Alaska • Better orientation for future southern extension • Affects SW Oregon Street and 44th Avenue SW
West Seattle Golf Course/ Alaska Junction (1)	• Crosses West Seattle Golf Course (Section 4(f) resource) • Lessens effect to Alaska Junction and Delridge • Consolidating station not identified or analyzed in *ST3 Plan* • Tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships
SODO Segment	
ST3 Representative Project	• Baseline project (Elevated E-3)
Massachusetts Tunnel Portal	• Reduces cut-and-cover construction on 5th Avenue S in International District/ Chinatown • Less service disruption during construction • Eliminates existing grade crossing at Holgate • Requires longer tunnel, with more property acquisitions
Surface E-3	• Less service disruption during construction • Accommodates Stadium Station on both lines • Eliminates existing grade crossings at Lander and Holgate • Closes S Royal Brougham Way between 4th Avenue S and 6th Avenue S
Occidental Avenue	• Long-span elevated crossing over BNSF tracks • Traffic and freight access effects on Occidental Avenue S • Property impacts of alignment crossing from Occidental Avenue S to Stadium Station • Long track connection to OMF; no track connections between lines
Downtown Segment	
ST3 Representative Project	• Baseline project (5th/6th/Republican)
5th/Harrison	• Avoids utility conflicts on Republican and station under SR 99 off-ramp • Decreased station coverage; consider moving Denny Station south
6th/Boren/Roy	• Avoids utility conflicts on Republican and station under SR 99 off-ramp • Increases construction risk due to I-5 walls along 6th Avenue, but avoids tie-backs on 5th Avenue
5th Avenue Bored Tunnel/ Mined Station	• Reduces extent of cut-and-cover construction impacts • Deep mined station construction technically challenging (platform 100 to120 feet deep)

Table 5-1 Summary of Level 1 Alternatives Carried Forward into Level 2

Segment / Level 1 Alternative	Notes / Comments
4th Avenue Cut-and-Cover Tunnel/Station	• 4th Avenue S viaduct rebuild; potential major traffic, freight, and transit mobility impacts • Construction detours could impact neighborhood streets • 4th Avenue S viaduct rebuild; requires funding partnerships • LRT service disruptions during construction over existing tunnel • Constructability challenge of tunneling under I-90 ramps
4th Avenue Bored Tunnel/ Mined Station	• 4th Avenue S viaduct rebuild (at station); potential traffic, freight and transit mobility impacts • Construction detours could impact neighborhood streets • Deep mined station construction under 4th Avenue S (platform 150 to 200 feet deep) • Property impacts of TBM portal site in E3 busway
Interbay/Ballard Segment	
ST3 Representative Project	• Baseline project (Elliott/15th/Movable Bridge)
Elliott/15th/16th/Fixed Bridge	• Avoids 15th Avenue W and W Dravus Street interchange • Supports more reliable service; no bridge openings
West of BNSF/20th/17th/ Fixed Bridge	• Avoids Elliott Avenue W, 15th Avenue W, and Fishermen's Terminal • Supports more reliable service; no bridge openings
West of BNSF/20th/17th/ Tunnel	• Avoids Elliott Avenue W, 15th Avenue W, Fishermen's Terminal and Salmon Bay • Requires tunnel; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships
East of BNSF/14th/Movable Bridge	• Avoids Elliott Avenue W, 15th Avenue W, and Fishermen's Terminal • Locates station on 14th Avenue NW within industrial area
Elliott/Armory Way/14th/ Tunnel	• Avoids Elliott Avenue W, 15th Avenue W, Fishermen's Terminal and Salmon Bay • Locates station on 14th Avenue NW within industrial area • Requires tunnel; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships

NOTES:
(1) The SAG recommended that this alternative be screened out because of impacts to go through the middle of the golf course (Section 4(f) resource). The ELG recommended instead of screening out the alternative that it be refined to avoid or minimize impacts to the Section 4(f) resource. Therefore, this alternative was carried forward to Level 2 with the ELG's recommended refinements.
(2) Bridge alternatives do not preclude pedestrian/bicycle paths.

5.2 Alternatives Not Carried Forward into Level 2

Table 5-2 (Summary of Level 1 Alternatives Not Carried Forward into Level 2) shows the Level 1 alternatives and other suggestions that the ELG recommended not be carried forward into Level 2. Most of these alternatives did not adequately serve the community and/or were anticipated to have greater potential impacts to the community. As such, they would have limited ability to achieve the preliminary Purpose and Need for the WSBLE Project. In addition, some suggestions were not carried forward for further review in Level 1 because they were not identified or analyzed in the *ST3 Plan* relative to number of stations and/or travel markets served. Some suggestions were also deemed not practical or technically infeasible due to ROW, engineering and/or operational constraints.

Table 5-2 Summary of Level 1 Alternatives Not Carried Forward into Level 2

Segment / Level 1 Alternative or Other Suggestion	Notes / Comments	SAG and ELG Screening Reasoning
West Seattle/Duwamish Segment		
West Seattle Bridge/Fauntleroy	• Lessens effects to Alaska Junction and Delridge • Better orientation for future southern extension • Creates isolated Delridge Station	• Delridge Station location does not provide easy access to neighborhood centers and is lower performing for bicycle and pedestrian connectivity • Potentially greater ROW impacts to Port of Seattle/Northwest Seaport Alliance and other industrial businesses
Yancy Street/West Seattle Tunnel	• Lessens effects to Alaska Junction and Delridge • Better orientation for future southern extension • Consolidating stations not identified or analyzed in *ST3 Plan* • Requires tunnel; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships	• Potential impacts on industrial businesses and consolidation of the Delridge and Avalon stations not identified or analyzed in the *ST3 Plan*; support for three stations to serve walksheds and transit-oriented development and provide strong bus and rail integration
Duwamish Tunnel	• Impractical tunnel depth and length	• Technical feasibility issues
West Seattle Bridge	• Existing structure not built to accommodate LRT • Constructability issues	• Technical feasibility issues
Gondola and Rail/Bus Bridge (1)	• Mode not identified or analyzed in *ST3 Plan*	• Not identified or analyzed in the *ST3 Plan*
Extensions to Alki, Admiral, etc.	• Extensions not identified or analyzed in *ST3 Plan*	• Not identified or analyzed in the *ST3 Plan*
SODO Segment		
6th Avenue	• OMF connection technically challenging • Property impacts to locate SODO Station adjacent to existing station • Braiding lines could have major construction challenges and service disruptions	• Large amount of property impacts
Maintain Buses on E3	• Not practical due to ROW constraints	• Concerns about ROW constraints and technical feasibility
First Avenue Route	• Route and station locations not identified or analyzed in *ST3 Plan*	• Not identified or analyzed in the *ST3 Plan*
Design for Potential Extension South to Georgetown	• Not identified or analyzed in *ST3 Plan*	• Not identified or analyzed in the *ST3 Plan*
Track interlining	• Requires grade-separated junctions; does not accommodate buses on E3 busway • Creates bottleneck; impacts service reliability and limits system capacity	• Creates a potential bottleneck in the system
Extended Ballard Line	• Rebuild of S Forest Street junction requires disruption of existing LRT service • Deep mined International District/Chinatown Station; constructability challenges • Additional guideway length; no track connections	• Technical challenges and disruption to existing LRT service
Downtown Segment		
5th/Mercer	• Avoids utility conflicts on Republican and station under SR 99 off-ramp • Increases construction risk due to large sewer beneath Mercer	• Constructability issues with the International District/Chinatown Station, Columbia Tower tiebacks and utilities beneath Mercer Street • Concerns about potential construction effects to traffic and freight on Mercer Street, a high-volume roadway

Table 5-2 Summary of Level 1 Alternatives Not Carried Forward into Level 2

Segment / Level 1 Alternative or Other Suggestion	Notes / Comments	SAG and ELG Screening Reasoning
8th/6th/Republican	• Increases construction risk due to two crossings under I-5 • First Hill Station not identified or analyzed in *ST3 Plan*	• SAG recommended this alternative be carried forward; however, members recognized the potential constructability/engineering issues of crossing under I-5 at two locations, as well as potential inaccessibility for people with disabilities from downtown because of the steep grades west of the Midtown Station location • ELG recommended this alternative not be carried forward because it crosses under I-5 twice, the First Hill Station not identified or analyzed in the *ST3 Plan*, and existing transit investments already serve First Hill (Seattle Streetcar)
5th/Roy/Consolidated SLU Station	• Avoids utility conflicts on Republican and station under SR 99 off-ramp • Consolidating stations not identified or analyzed in *ST3 Plan*	• Did not support consolidating the Denny and South Lake Union stations
Union Station Bored Tunnel/Mined Station	• Deep piles under Union Station, existing International District/Chinatown Station and adjacent buildings require deep mined station (platform 150 to 200 feet deep) • Deep station precludes easy pedestrian connections to International District/Chinatown and King Street stations • Risk of settlement damage to landmark US building • Lacks construction staging and access shaft sites	• Technical feasibility issues
Use Existing DSTT	• Existing DSTT has capacity constraints	• Technical feasibility issues
Design for Potential Extensions to North and/or East	• Extensions to north and/or east not identified or analyzed in *ST3 Plan*	• Not identified or analyzed in the *ST3 Plan*
Interbay/Ballard Segment		
West of BNSF/20th/Tunnel	• Avoids Elliott Avenue W, 15th Avenue W, Fishermen's Terminal and Salmon Bay • Requires longer tunnel; tunnel costs not included in ST3 financial plan or evaluation methodology and may require funding partnerships • Requires construction and displacement within Ballard core	• SAG recommended carrying this alternative be carried forward because of community interest in a station farther west in Ballard and an interest in carrying forward multiple tunnel options • ELG recommended this alternative not be carried forward due to anticipated constructability issues and higher costs associated with the longer tunnel
Tunnel through Queen Anne/ Interbay	• Depth and length impractical; would affect downtown tunnel depth	• Technical feasibility and anticipated higher costs associated with additional tunnel sections
Extensions to 65th, 85th, Northgate	• Extensions not identified or analyzed in *ST3 Plan*	• Not identified or analyzed in the *ST3 Plan*
Multimodal Salmon Bay Bridge	• Multimodal bridge not identified or analyzed in *ST3 Plan*	• Not identified or analyzed in the *ST3 Plan*
Eliminate or Add Stations	• Eliminating, consolidating or adding stations not identified or analyzed in *ST3 Plan*	• Not identified or analyzed in the *ST3 Plan*

NOTES:
(1) Bridge alternatives do not preclude pedestrian/bicycle paths.

6 NEXT STEPS

The Level 2 Screening step will develop and evaluate in greater detail the 20 alternatives carried forward from the Level 1 Screening, as shown on **Figure 6-1** (Next Steps in Alternatives Development Phase). However, the Level 2 evaluation will employ a larger set of criteria and more use of quantitative measures, but still combine qualitative and quantitative assessments. Similar to Level 1, the Level 2 Screening will be conducted at the segment level.

The Level 2 alternatives will be subjected to design refinement, responding to stakeholder and community comments on the alternatives. More detailed technical analyses will include capital and operating cost implications, station area development potential, and effects on the built, natural, and social environments.

For the final Level 3 Screening, a more refined definition of alternatives and evaluation process will be used, with additional engineering, forecasting, environmental, and other information. At this stage, the segment-level alternatives will be pieced together from end-to-end, providing corridorwide alternatives from West Seattle to Ballard. Eventually, a Preferred Alternative will be identified by the Sound Transit Board for advancement into the environmental review phase, along with other alternatives to evaluate in an EIS.

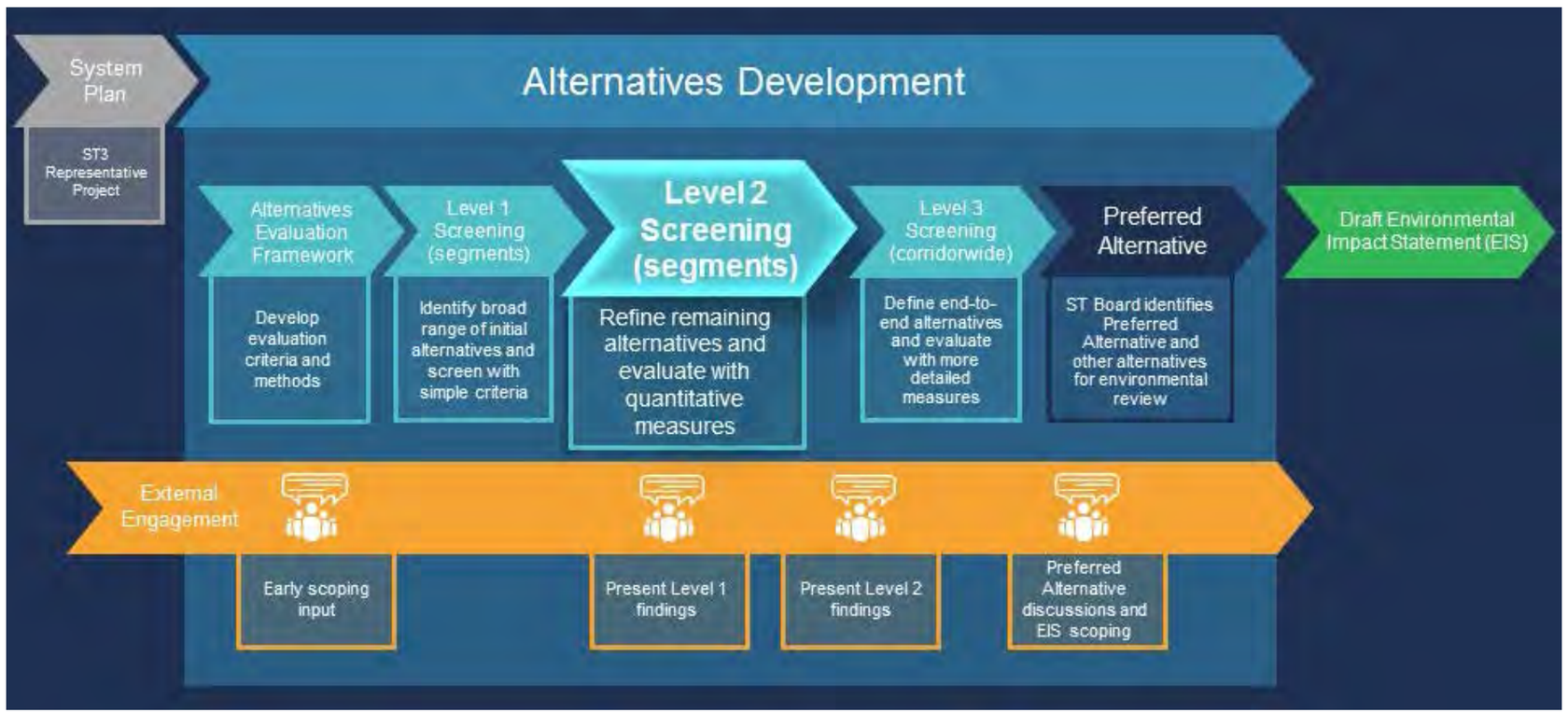


Figure 6-1 Next Steps in Alternatives Development Phase

7 REFERENCES

7.1 GIS Data References

ACS, Census Bureau. 2010. Minority population. US Census Data. Derived from 2012-2106 American Community Survey 5-Year average and 2010 Census. Accessed February 28, 2018.

ACS, Census Bureau. 2010. Low-income population. US Census Data. Derived from 2012–2106 American Community Survey 5-Year average and 2010 Census data. Accessed February 28, 2018.

City of Seattle. 2011. Environmentally Critical Areas, 6/7/2011. Accessed February 15, 2018.

City of Seattle. 2016. Access to opportunity. Final Access to Opportunity Index from Seattle 2035 Growth and Equity Report. Accessed February 16, 2018.

City of Seattle. 2016. Final Displacement Risk Index from Seattle 2035 Growth and Equity Report. Accessed February 16, 2018.

King County. 2018. Public parks within King County. Derived from web services provided by King County: http://www5.kingcounty.gov/gisdataportal/. Accessed March 28, 2018.

King County. 2018. Location of trails in King County. Derived from web services provided by King County: http://www5.kingcounty.gov/gisdataportal/. Accessed February 15, 2018.

U.S. Environmental Protection Agency. 2015. Lower Duwamish Waterway Superfund Site. Accessed February 19, 2018.

Washington State Department of Archaeology and Historic Preservation. 2017. NHRP Register properties and districts. Last updated May 8, 2017. Derived from web services provided by Department of Archaeology and Historic Preservation (DAHP) register properties: http://www.dahp.wa.gov. Accessed January 30, 2018.

7.2 Written Resources

Puget Sound Regional Council. 2009. *VISION 2040*, *The Growth Management, Environmental, Economic, and Transportation Strategy for the Central Puget Sound Region*. Adopted by the PSRC General Assembly April 24, 2008. Amended by the PSRC Executive Board May 28, 2009.

Sound Transit. 2014. *Sound Transit Regional Transit Long-Range Plan*. Adopted December 18, 2014. Adopted by the Sound Transit Board December 18, 2014 through Resolution No. R2014-31.

Sound Transit. 2016. *Sound Transit 3, The Regional Transit System Plan for Central Puget Sound*. Adopted by the Sound Transit Board June 23, 2016.

Sound Transit. 2018a. *Alternatives Evaluation Framework and Methodology Technical Memorandum*. West Seattle and Ballard Link Extensions Project. March 2018.

Sound Transit. 2018b. *Early Scoping Summary Report*. West Seattle and Ballard Link Extensions Project. April 2018.

APPENDIX A

West Seattle/Duwamish Segment
Level 1 Evaluation Matrices

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Evaluation Criteria and Measures

	Reliable Service	Travel Times	Regional Connectivity	Transit Capacity	Projected Transit Demand	Regional Centers Served	ST Long Range Plan Consistency	Mode, Route, and Station Locations (per ST3)	Potential ST3 Operating Plan Effects	Engineering Constraints	Constructability Issues	Operational Constraints	Qualitative Capital Cost Comparison	Historically Underserved Populations	Station Land Use Plan Consistency	Station Proximity to Urban Centers/Villages	Bus/Rail Integration	Bicycle/Pedestrian Connectivity	Station Area Development Potential	Protected Natural Resources	Protected Built/Social Environment	Burden on Underserved Populations	Traffic Circulation/Access	Freight Access	Business/ Commerce
ST3 Representative Project (Baseline)	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Pigeon Ridge / West Seattle Tunnel	◑	◑	◑	◑	◑	○	●	◑	◑	◑	○	●	○	◑	◑	◑	●	◑	◑	○	○	◑	●	●	◑
West Seattle Bridge / Fauntleroy	◑	◑	◑	◑	◑	◑	●	◑	◑	◑	◑	●	○	◑	○	○	◑	○	◑	●	◑	◑	●	○	○
Yancy Street / West Seattle Tunnel	◑	◑	◑	◑	○	◑	●	○	◑	◑	○	●	○	◑	○	○	◑	○	◑	◑	●	◑	●	○	○
Oregon Street / Alaska Junction	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	◑	◑	◑	●	◑	◑	◑	○	◑	◑	○	○
West Seattle Golf Course / Alaska Junction	◑	◑	◑	◑	○	◑	◑	○	◑	◑	◑	●	◑	◑	◑	○	◑	◑	◑	○	○	◑	●	◑	◑

● Higher Performance	◑ Comparable Performance	○ Lower Performance

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (South of West Seattle Bridge)		Pigeon Ridge/West Seattle Tunnel	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time approximately 7 minutes for route alignment within West Seattle/Duwamish Segment	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Facilitates regional connectivity	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Baseline for comparison	Comparable	• Consistent with ST3 Representative Project
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project (approximately 16,000)	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 5% greater than ST3 Representative Project (approximately 16,800)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center served (Duwamish)	Lower	• No regional centers served
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Difficult to turn south onto California Avenue SW and would require elevated structure along California Avenue SW • Further away from 35th Avenue SW to go south	Higher	• Oriented north-south in tunnel
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Facilitates special trackwork that supports operational flexibility	Comparable	• Consistent with ST3 Representative Project
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Long-curved span over S Spokane Street requires a more specialized bridge type, unless a column practical in gore between Spokane Street Viaduct and 4th Avenue S off ramp	Comparable	• No long-curved span • Longer waterway crossing, potential in-water bridge column for Duwamish Waterway crossing depending on bridge type • Tunnel through ridge of Pigeon Point presents additional challenges • Less impact on maintenance of traffic in industrial areas (i.e., Seattle City Light [SCL])
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• General utility conflicts • Difficult construction at Pigeon Point • Potential in-water work for Duwamish Waterway crossing	Lower	• General utility conflicts • High voltage parallel to guideway at busway between 4th and 6th avenues; powerline ends at Industrial Way S • High voltage crossing 4th Avenue S to 4th Avenue S substation • Potential greater in-water work for Duwamish Waterway crossing • Two tunnels and two cut-and-cover stations

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (South of West Seattle Bridge)		Pigeon Ridge/West Seattle Tunnel	
			Rating	Evaluation	Rating	Evaluation
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• High rail access from S Forest Street operations and maintenance facility (OMF) • Grade constraints throughout alignment	Higher	• Better OMF access • Fewer curves on alignment • Wider curve for improved design speed prior to crossing Duwamish Waterway from Seattle
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Comparable	• Total route length approximately 18,500 feet • Approximately 5,000-foot long span bridges • Three elevated stations	Lower	• Total length of alignment approximately 2,000 feet longer than ST3 Representative Project • Approximately 4,500-foot long span bridge, approximately 500 feet less than ST3 Representative Project • Approximately 7,700-foot tunnel • Relocation of major utilities • Less ROW requirement in West Seattle relative to ST3 Representative Project • One elevated and two tunnel stations • Tunnel costs not included ST3 financial plan or methodology
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of moderate access to opportunity	Comparable	• All stations located in areas of moderate access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Local land use plans supportive of all three proposed stations • Alaska Junction and Avalon Station locations would serve recently rezoned West Seattle Triangle area • *North Delridge Draft Action Plan* was completed in 2016 and includes Delridge Station area	Comparable	• Similar to ST3 Representative Project; all three proposed stations located in areas with supportive planning
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• Alaska Junction and Avalon Stations located within West Seattle Hub Urban Village	Comparable	• Alaska Junction and Avalon Stations located within West Seattle Hub Urban Village
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Active bays may be limited under street-wide stations at Delridge and Alaska Junction • Constrained layover options at Alaska Junction Station	Higher	• More space for active bays at Avalon Station with tunnel station • Better layover opportunity at Alaska Junction Station
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Delridge Station area includes steep grades to east and Avalon Station area includes steep grades in all directions, less grade challenges at Alaska Junction Station • Separated bike path along Delridge Way SW near Delridge Station (heading north from SW Andover Street) • Alki multi-use trail located north of Spokane Street but some challenges to access trail from Delridge Station	Comparable	• Topography at station areas similar to ST3 Representative Project • Delridge Station approximately 0.25 miles further south from Alki multi-use trail and Delridge Way SW bike path
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Approximately 300 acres with potential for development opportunities	Comparable	• Comparable to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• Potential impacts to wetlands and Longfellow Creek along SW Genesee Street • Steep slopes and habitat on Pigeon Point affected • Potential in-water work in West Duwamish Waterway	Lower	• Potential impacts to wetlands and Longfellow Creek along SW Genesee Street • Steep slopes and habitat on West Duwamish Greenbelt affected • Crosses Duwamish Waterway within boundary of Lower Duwamish Waterway Superfund site • Potential in-water work in Duwamish Waterway

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (South of West Seattle Bridge)		Pigeon Ridge/West Seattle Tunnel	
			Rating	Evaluation	Rating	Evaluation
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential for residential displacements in Delridge, Avalon, and Junction neighborhoods • Potential for neighborhood impacts along elevated alignment (visual, noise and construction) • Potential Impacts to Pigeon Point open space • Potential impacts to historic properties	Lower	• Potential impacts to West Duwamish Greenbelt open space and West Seattle Golf Course • Lower potential for residential and business displacements due to tunnel and avoids turn from Delridge Way SW to SW Genesee Street • Potential for neighborhood impacts along elevated alignment along SW Genesee Street (visual, noise and construction) • Avoids potential permanent visual and noise impacts in Avalon and Junction neighborhoods. • Cut-and-cover Avalon Station could potentially require residential displacements • Cut-and-cover Alaska Junction Station could potentially require business displacements • Potential for archaeological resources on west side of Duwamish Waterway
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Comparable	• Affects traffic lanes and/or circulation on SW Klickitat Way, Delridge Way SW, SW Genesee Street, Fauntleroy Way SW, and SW Alaska Street	Higher	• Affects traffic lanes and/or circulation on SW Genesee Street • Avoids potential roadway impacts on Fauntleroy Way SW and SW Alaska Street
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Comparable	• Columns might partially block N. parking/access road at Terminal 102 on Harbor Island • Construction could block N. parking area/access at Terminal 102 temporarily; also, could interrupt railroad access to West Seattle during foundation construction • Construction at SCL maintenance facility could partially block S Spokane Street during foundation construction	Higher	• Avoids disruption to freight movement on Harbor Island • Columns could partially block local truck traffic to warehouses on S Nevada Street • Construction could partially block local truck traffic to S Nevada during foundation construction • Construction could partially block truck traffic at about 4th Avenue S and S Industrial Way
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Comparable	• Potentially require business displacements in Alaska Junction area • Potential impacts to businesses along alignment during construction	Comparable	• Potentially require business displacements in Alaska Junction area; could be lower based on tunnel type • Potential Impacts to businesses along alignment during construction

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			West Seattle Bridge/Fauntleroy		Yancy/West Seattle Tunnel	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project	Comparable	• Travel time comparable ST3 Representative Project; faster average speed due to one less station
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 6% less than ST3 Representative Project (approximately 15,000)	Lower	• Total 2040 population and employment within 0.5-mile buffer of stations 12% less than ST3 Representative Project (approximately 14,100)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center served (Duwamish)	Comparable	• One regional manufacturing/industrial center served (Duwamish)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Higher	• Oriented north-south • Closer to 35th Avenue SW to go south	Higher	• Oriented north-south • Closer to 35th Avenue SW to go south
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Lower	• Consolidating stations not identified or analyzed in ST3 Plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Avoids Pigeon Point and tall guideway along SW Genesee Street • Requires Port of Seattle/Northwest Seaport Alliance (NWSA) property access east of West Duwamish Waterway • One span over 700 feet and would require a long span bridge; large culvert (80-inch diameter) for Longfellow Creek and large sewer (96-inch) crossing near bridge piers could likely increase span • Delridge Station north of West Seattle Bridge would be tall and need to be integrated with long span bridge	Comparable	• Avoids Pigeon Point and tall guideway along SW Genesee Street • Requires Port of Seattle/NWSA property access east of West Duwamish Waterway • Requires easement from Nucor Steel

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			West Seattle Bridge/Fauntleroy		Yancy/West Seattle Tunnel	
			Rating	Evaluation	Rating	Evaluation
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• General utility conflicts • Potential conflicts with existing large culvert (80-inch diameter) for Longfellow Creek near Delridge Station • Construction sequencing to accommodate Port of Seattle/NWSA operations • Potential in-water work for Duwamish Waterway crossing • Construction of tall Delridge Station with a long span bridge (structurally separated) • Three elevated stations	Lower	• General utility conflicts • Construction sequencing to accommodate Port of Seattle/NWSA operations • Construction sequencing to accommodate Nucor Steel operations • Potential in-water work for Duwamish Waterway crossing • Tunnel cut-and-cover station
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Higher	• More direct access to OMF assuming more property acquisitions • Fewer curves on alignment	Higher	• More direct access to OMF assuming more property acquisitions • Fewer curves on alignment
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Lower	• Approximately 9,200-foot long span bridge • Long span bridge and tall station at bridge; an approximate 4,100-foot increase from ST3 Representative Project • Potential less ROW impact in West Seattle and greater Port of Seattle/NWSA ROW impact • Three elevated stations	Lower	• Approximately 7,900-foot long span bridge; an approximate 2,800-foot increase from ST3 Representative Project • Approximately 4,800-foot tunnel • Potential less ROW impact in West Seattle and greater Port of Seattle/NWSA ROW impact • One elevated and one tunnel station; consolidating sations not identified or analyzed in *ST3 Plan* • Tunnel costs not included ST3 financial plan or methodology
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• Delridge Station would provide higher access for historically underserved populations but located in area with low population and not walkable from neighborhoods; other stations would be comparable	Comparable	• All stations located in areas of moderate access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Lower	• Local land use plans supportive of station at Alaska Junction and Avalon Station locations and would serve recently rezoned West Seattle Triangle area • Delridge Station less consistent with plans because station area not located within North Delridge neighborhood and within Manufacturing/Industrial uses and encompasses Port of Seattle/NWSA uses	Lower	• Local land use plans supportive of station at Alaska Junction location and would serve recently rezoned West Seattle Triangle area • Delridge Station less consistent with plans as it would not be located in North Delridge neighborhood and located on edge of Manufacturing/Industrial area
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Lower	• Alaska Junction and Avalon stations on edge of West Seattle Hub Urban Village • Delridge Station not within designated Urban Center or Village	Lower	• Alaska Junction would be the only station located within West Seattle Hub Urban Village • Delridge Station not within designated Urban Center or Village
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Less bus route diversion at Avalon Station, but more bus diversion to Delridge Station • Could integrate bus service from Admiral • Better layover opportunity at Alaska Junction Station	Comparable	• SW Yancy Street could be hub for bus service from Delridge and Admiral, although all would need to divert • Better layover and active bay opportunities at Alaska Junction Station (tunnel) • May need more active bays due to removal of Avalon Station
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Lower	• Topography at station areas similar to ST3 Representative Project • Delridge Station directly adjacent to Alki multi-use trail but man-made barriers restrict access to station from Delridge neighborhood (West Seattle Bridge and Nucor Steel)	Lower	• Topography at Alaska Junction Station similar to ST3 Representative Project • Yancy Station located in a valley and adjacent to man-made barrier (Nucor Steel); no strong street grid in this area and many streets do not continue through to arterials

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			West Seattle Bridge/Fauntleroy		Yancy/West Seattle Tunnel	
			Rating	Evaluation	Rating	Evaluation
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Comparable to ST3 Representative Project	Comparable	• Comparable to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Higher	• Avoids potential impacts to wetlands and Longfellow Creek along SW Genesee Street • Avoids steep slopes and habitat on Pigeon Point • Potential impacts to habitat restoration area at Terminal 25 • Potential in-water work in West Duwamish Waterway	Comparable	• Comparable potential for impacts to wetlands and Longfellow Creek along SW Genesee Street • Avoids steep slopes and habitat on Pigeon Point • Potential impacts to habitat restoration area at Terminal 25 • Potential in-water work in West Duwamish Waterway
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Avoids potential residential displacements in Delridge neighborhood and potentially Avalon neighborhood • Potential for neighborhood impacts along elevated alignment for areas along Fauntleroy Way SW (visual, noise and construction), but avoid for areas along SW Genesee Street and Delridge Way SW • Avoids potential impacts to Pigeon Point open space	Higher	• Lower potential for residential displacements in Delridge neighborhood • Avoids potential residential displacements in Avalon neighborhood • Potential for residential and/or business displacements for Junction Station near Fauntleroy Way SW • Lower potential for neighborhood impacts along elevated alignment than alignments on Delridge Way SW and SW Genesee Street (visual, noise and construction) • Potential impacts to Pigeon Point open space
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Higher	• Affects traffic lanes and/or circulation on Fauntleroy Way SW and below West Seattle Bridge at Delridge Station • Avoids potential impacts to SW Klickitat Way, Delridge Way SW, and SW Genesee Street	Higher	• Potential impacts to traffic circulation in vicinity of SW Yancy Street and SW Andover Street • Avoids potential traffic impacts on SW Genesee Street, SW Klickitat Way and SW Alaska Street
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Lower	• Potential columns in gate area of Terminal 18 and at maritime facility east of Terminal 18 • Pier construction at E Marginal Way/Spokane Street could likely disrupt north-south traffic, truck gate operations at Terminal 18 and maritime facility east of Terminal 18 • Construction could likely disrupt repackaging operations for maritime/truck shipment on west side of West Duwamish Waterway • Construction could likely disrupt of perimeter road and lead tracks in Terminal 5 during foundation construction	Lower	• Potential columns in gate area of Terminal 18 and at maritime facility east of Terminal 18 • Columns in Nucor Steel yard could likely disrupt material supply to facility • Pier construction at E Marginal Way/Spokane Street could likely disrupt north-south traffic, truck gate operations at Terminal 18 and maritime facility east of Terminal 18 • Construction could likely disrupt repackaging operations for maritime/truck shipment on west side of West Duwamish Waterway • Foundation construction in Nucor Steel yard could likely disrupt material supply to facility
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Lower	• Avoids potential business displacements in Alaska Junction area • Potential impacts to industrial businesses north of West Seattle Bridge • Potential impacts to businesses along alignment during construction	Lower	• Avoids potential business displacements in Alaska Junction area • Could affect Nucor Steel operations • Potential impacts to industrial businesses north of West Seattle Bridge • Potential impacts to businesses along alignment during construction • Potentially requires business displacements on Fauntleroy Way SW; could be lower based on tunnel type

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			Oregon Street/Alaska Junction		West Seattle Golf Course/Alaska Junction	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project; faster average speed due to one less station
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 8% greater than ST3 Representative Project (approximately 17,200)	Lower	• Total 2040 population and employment within 0.5-mile buffer of stations 12% less than ST3 Representative Project (approximately 14,100)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center served (Duwamish)	Comparable	• One regional manufacturing/industrial center served (Duwamish)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Oriented north-south, but west of California Avenue SW to go south • Requires elevated along California Avenue SW to south	Comparable	• Oriented east-west in a tunnel at Fauntleroy Way SW, but would require a U-turn to orient south towards 35th Avenue SW
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Lower	• Consolidating stations not identified or analyzed in ST3 Plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation and/or degrades system operations	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Avoids Pigeon Point • Requires Port of Seattle/NWSA property access east of West Duwamish Waterway	Comparable	• Long curved span over S Spokane Street requires a more specialized bridge type, unless a column practical in gore between Spokane Street Viaduct and 4th Avenue S off-ramp • Reduced property impacts along SW Genesee Street but potential impacts to West Seattle Golf Course and Delridge Community Center yard/park
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• General utility conflicts • Construction sequencing to accommodate Port of Seattle/NWSA operations • Construction sequencing to accommodate Nucor Steel operations • Potential in-water work for Duwamish Waterway crossing • Three elevated stations	Comparable	• General utility conflicts • Difficult construction at Pigeon Point • Potential in-water work for Duwamish Waterway crossing • Tunnel cut-and-cover station

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			Oregon Street/Alaska Junction		West Seattle Golf Course/Alaska Junction	
			Rating	Evaluation	Rating	Evaluation
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• More direct access to OMF assuming more property acquisitions • Longer route and curves into Alaska Junction	Higher	• Fewer curves on alignment
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Lower	• Approximately 6,800-foot long span bridge, an approximate 1,800-foot increase from ST3 Representative Project • More ROW impact in West Seattle relative to ST3 Representative Project • Three elevated stations	Comparable	• Approximately 4,900-foot long span bridges • Approximately 3,000-foot tunnel • Less ROW impact in West Seattle relative to ST3 Representative Project • One elevated and one tunnel station; consolidating stations not identified or analyzed in *ST3 Plan* • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of moderate access to opportunity	Comparable	• All stations located in areas of moderate access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Similar to ST3 Representative Project, all three proposed stations located in areas with supportive planning	Comparable	• Local land use plans supportive of stations at Alaska Junction and Delridge
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• Alaska Junction and Avalon stations located within West Seattle Hub Urban Village	Lower	• Alaska Junction would be the only station located within West Seattle Hub Urban Village
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Higher	• More available space for active bays and transit access to Alaska Junction and Delridge stations, along with layover at Alaska Junction area • Some bus diversion to Avalon Station	Comparable	• Available space for active bays and transit access to Alaska Junction Station (tunnel station) • Likely bus diversion due to elimination of Avalon Station • Active bays may be limited under or adjacent to Delridge Station spanning roadway
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Topography at station areas similar to ST3 Representative Project	Comparable	• Topography at station areas similar to ST3 Representative Project
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Comparable to ST3 Representative Project	Comparable	• Comparable to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• Potential impacts to wetlands and Longfellow Creek along SW Genesee Street • Avoids steep slopes and habitat on Pigeon Point affected because on north side of West Seattle Bridge • Potential impacts to habitat restoration area at Terminal 25 • Potential in-water work in West Duwamish Waterway	Lower	• Greater potential for impacts to habitat in West Seattle Golf Course • Potential impacts to steep slopes and habitat on Pigeon Point • Potential in-water work in West Duwamish Waterway

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

West Seattle/Duwamish Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			Oregon Street/Alaska Junction		West Seattle Golf Course/Alaska Junction	
			Rating	Evaluation	Rating	Evaluation
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Lower	• Potential for residential displacements in Delridge, Avalon and Junction neighborhoods • Potential for neighborhood impacts along elevated alignment (visual, noise and construction) • Could potentially remove buildings in Junction commercial district	Lower	• Traverses West Seattle Golf Course (Section 4(f) resource), likely requiring showing no feasible and prudent alternative • Avoids potential residential displacements in Delridge and Avalon neighborhoods • Lower potential for neighborhood impacts along elevated alignment than alignment along SW Genesee Street (visual, noise and construction)
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Comparable	• Affects traffic lanes and/or circulation on Delridge Way SW, SW Genesee Street, Fauntleroy Way SW, SW Oregon Street, and 44th Street SW • Avoids potential traffic impacts on SW Alaska Street	Higher	• Affects traffic lanes and circulation on Delridge Way SW • Avoids potential permanent traffic impacts on SW Genesee Street, Fauntleroy Way SW and SW Alaska Street
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Lower	• Potential columns in gate area of Terminal 18 and at maritime facility east of Terminal 18 • Pier construction at E Marginal Way/Spokane Street could likely disrupt north-south traffic, truck gate operations at Terminal 18 and maritime facility east of Terminal 18 • Construction could likely disrupt repackaging operations for maritime/truck shipment on west side of West Duwamish Waterway	Comparable	• Columns could likely partially block N. parking/access road at Terminal 102 on Harbor Island • Construction could likely block N. Parking area/access at Terminal 102 temporarily; also, could likely interrupt railroad access to West Seattle during foundation construction • Construction of column at SCL maintenance facility could likely partially block S Spokane Street during foundation construction
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Lower	• Potentially greater business displacements along alignment • Potential impacts to industrial businesses north of West Seattle Bridge • Potential impacts to businesses along alignment during construction	Comparable	• Avoids potential business displacements in Alaska Junction area • Potential business displacements at SW Alaska Street and Fauntleroy Way SW, depending on tunnel type • Potential impacts to businesses along alignment during construction

APPENDIX B

SODO Segment
Level 1 Evaluation Matrices

SODO Segment – Additional Level 1 Alternatives Evaluation

Evaluation Criteria and Measures

	Reliable Service	Travel Times	Regional Connectivity	Transit Capacity	Projected Transit Demand	Regional Centers Served	ST Long Range Plan Consistency	Mode, Route, and Station Locations (per ST3)	Potential ST3 Operating Plan Effects	Engineering Constraints	Constructability Issues	Operational Constraints	Qualitative Capital Cost Comparison	Historically Underserved Populations	Station Land Use Plan Consistency	Station Proximity to Urban Centers/Villages	Bus/Rail Integration	Bicycle/Pedestrian Connectivity	Station Area Development Potential	Protected Natural Resources	Protected Built/Social Environment	Burden on Underserved Populations	Traffic Circulation/Access	Freight Access	Business/ Commerce
ST3 Representative Project (Baseline)	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Massachusetts Tunnel Portal	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	◑	◑	◑	◑	◑	◑	◑	●	●	●	●	●
Surface E-3	●	◑	●	◑	◑	◑	◑	◑	●	◑	●	●	◑	◑	◑	◑	●	◑	◑	◑	◑	◑	●	●	●
Occidental Avenue	◑	◑	○	◑	◑	◑	◑	◑	○	○	○	○	○	●	◑	◑	○	●	◑	◑	◑	◑	○	○	○
6th Avenue	◑	◑	◑	◑	◑	◑	◑	◑	○	◑	○	○	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	○	○

● Higher Performance ◑ Comparable Performance ○ Lower Performance

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

SODO Segment – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (Elevated E-3)		Massachusetts Tunnel Portal	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time approximately 3 minutes for route alignment within SODO Segment	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Facilitates spine segmentation by providing connections to new tunnel	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Baseline for comparison	Comparable	• Consistent with ST3 Representative Project
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations approximately 23,700	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project (approximately 23,700)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center (MIC) served (Duwamish)	Comparable	• One regional manufacturing/industrial center (MIC) served (Duwamish)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Consistent with Sound Transit Long-Range Plan	Comparable	• Consistent with Sound Transit Long-Range Plan
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Facilitates special trackwork and system reliability	Comparable	• Facilitates special trackwork and system reliability similar to ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

SODO Segment – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (Elevated E-3)		Massachusetts Tunnel Portal	
			Rating	Evaluation	Rating	Evaluation
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Impacts to Ryerson Base during construction • Potential location of guideway columns to minimize impact to Burlington Northern-Santa Fe (BNSF)/Union Pacific (UP) • "S" development encroachment and right-of-way (ROW) needs • Washington State Department of Transportation (WSDOT)/EastLink structure modifications • Elevated guideway has greatest amount of ground improvements • Overhead transmission line greatest impact • Interim terminus (interlining) may result in Royal Brougham closure	Comparable	• Proximity issue to existing foundations of WSDOT/EastLink structures • Moderate amount of ground improvements • Least impact to Ryerson Base • "S" Development minimal encroachment • Potential location of guideway columns to minimize impact to BNSF/UP • Design of bored tunnel and portal in poor soils and high-water table • Greater ROW needs than ST3 Representative Project • Tunnel profile may result in Holgate needing to be grade separated • Overhead transmission line impact • Interim terminus (interlining) may result in Royal Brougham closure
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• Light rail lines at different elevations for most of E-3 • Limited area for construction staging may result in increased service disruption • Proximity to Immigration and Naturalization Service (INS) (historic immigration building) property • South tunnel portal requires WSDOT/EastLink structure modifications • Tunnel portal and retained cut and proximity to operating trackway may need temporary track and temporary closure of Stadium Station	Comparable	• South tunnel portal would not require WSDOT/EastLink structure modifications • No construction on existing Line north of Holgate and no impacts to Stadium Station • No impacts to INS (historic immigration building) property • Bored tunnel and portal through poor soils and high-water table • Light rail lines at different elevations for most of E-3 • Limited area for construction staging may result in increased service disruption
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• Generally meets operation goals and pocket tracks • Has at-grade roadway crossings on Ballard-Tacoma Line at Holgate and Lander, and on Everett-West Seattle Line at Royal Brougham • May not be able to provide connection between West Seattle and Ballard lines	Comparable	• Generally, meets operation goals and pocket tracks • Has at-grade roadway crossing on Ballard-Tacoma Line at Lander, and on Everett-West Seattle Line at Royal Brougham (existing) • May not be able to provide connection between West Seattle and Ballard lines
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Comparable	• Total length of West Seattle alignment: approximately 5,900 feet • Total length of Ballard alignment: approximately 3,800 feet • One elevated and one at grade station	Lower	• Avoids "S" Development ROW • Avoids WSDOT ramp structure modifications • Does not require Stadium Station to be reconstructed • Reduced elevated guideway length • No elevated pocket track • ROW required along east side of E-3, north of SODO Station • Longer tunnel length (approximately 800 feet more), but avoids cut-and-cover tunnel construction in constrained area • One elevated and one at grade station
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of high access to opportunity	Comparable	• All stations located in areas of high access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Existing station locations	Comparable	• Existing station locations
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• Existing station locations outside of designated urban center/village	Comparable	• Comparable to ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

SODO Segment – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (Elevated E-3)		Massachusetts Tunnel Portal	
			Rating	Evaluation	Rating	Evaluation
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Available space for active bays and transit access; no layovers needed	Comparable	• Available space for active bays and transit access; no layovers needed
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Relatively flat station areas • Adjacent to E-3 trail • Large north/south block sizes limit east and east and west access • Man-made barriers such as rail lines	Comparable	• Comparable to ST3 Representative Project
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Limited likelihood for redevelopment based on existing zoning	Comparable	• Limited likelihood for redevelopment based on existing zoning
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• No identified impacts to protected natural resources • Located in critical area for liquefaction prone soils (Seattle Environmentally Critical Areas [ECA])	Comparable	• No identified impacts to protected natural resources • Located in critical area for liquefaction prone soils (Seattle ECA)
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential impacts to National Register of Historic Places (NRHP) listed INS Building	Higher	• Avoids potential impacts to NRHP-listed INS Building
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk	Higher	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Reduces cut-and-cover construction impacts to Chinatown/International District neighborhood
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Comparable	• Potential traffic impacts during construction of cut-and-cover tunnel at Royal Brougham Way, Seattle Boulevard and Jackson Street	Higher	• Avoids potential traffic impacts at Royal Brougham Way, Seattle Boulevard and Jackson Street during construction • Eliminates existing light rail grade crossing at Holgate with roadway overcrossing; roadway overcrossing may impact local property access
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Comparable	• Freight could be affected by changes in traffic patterns during construction • No permanent access impacts expected	Higher	• Removal of at-grade crossing at Holgate would benefit freight mobility • Freight could be affected by changes in traffic patterns during construction • Removal of at-grade crossing at Holgate could change property access
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Comparable	• Low potential for business displacements • Businesses could be affected by changes in traffic patterns during construction • No permanent access impacts expected	Higher	• Low potential for business displacements • Businesses could be affected by changes in traffic patterns during construction, but to lesser degree • No permanent access impacts expected

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

SODO Segment – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			Surface E-3		Occidental Avenue	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Higher	• Requires full or partial closure of Royal Brougham • Full grade separation of Holgate and Lander; improves reliability of existing light rail line	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Higher	• Consistent with ST3 Representative Project • Two Stadium Stations allows for greater regional connectivity	Lower	• Reduces network integration and connectivity with location of new SODO Station on Occidental Avenue
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project (approximately 23,700)	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations approximately 3% higher than ST3 Representative Project (approximately 24,400)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center (MIC) served (Duwamish)	Comparable	• One regional manufacturing/industrial center (MIC) served (Duwamish)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Consistent with Sound Transit Long-Range Plan	Comparable	• Consistent with Sound Transit Long-Range Plan
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Higher	• At grade surface alignment with roadway grade separations facilitate special trackwork for connectivity between West Seattle and Ballard lines	Lower	• Does not provide all required special trackwork for connectivity between West Seattle and Ballard lines

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

SODO Segment – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			Surface E-3		Occidental Avenue	
			Rating	Evaluation	Rating	Evaluation
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Minimizes impacts to WSDOT/EastLink structures • Minimizes elevated guideway and associated ground improvements • Overhead transmission line potential option for relocation in E-3 • "S" Development encroachment and ROW needs • SDOT approval needed for roadway grade separations (Lander, Holgate, Massachusetts) and Royal Brougham closure • Ryerson Base additional area needed • BNSF/UP freight rail impacted north of Lander due to roadway overcrossing and SODO Station footprint	Lower	• Long-span crossing of BNSF tracks presents engineering challenges associated with special structures • Occidental has a 60-foot ROW with a large amount of utilities (i.e., 30" stormwater drainage, 24" sanitary sewer, 12" water, overhead power, Comm ductbanks); creates design challenges to fit the Project within this constrained ROW, as well as would require relocation of a portion of overhead transmission lines • Guideway widening for SODO Station with center platform may exceed available ROW width • Elevated guideway requires ground improvements • Permanent impacts to Ryerson Base • Property impacts due to crossing from Spokane Street to Occidental and from Occidental to E-3; likely property needs for SODO Station access • Operations and maintenance facility (OMF) connection requires longer segment of elevated guideway with associated ground improvements, and greater ROW needs • Reduces impact to E-3 busway by running along Occidental
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Higher	• South tunnel portal does not require WSDOT/EastLink structure modifications • No impacts to Stadium Station • Both light rail lines at-grade in E-3 increases area for construction staging, likely least amount of service disruption • Roadway overcrossing structures in poor soils and protection of existing utilities • Proximity to INS (historic immigration building) property	Lower	• Long-span crossing of BNSF tracks presents construction challenges and special structures • Maintenance of traffic and parking impacts during construction in narrow street ROW of Occidental Avenue • Construction phasing in Ryerson Base/Stadium Station area likely to result in longer periods of service disruption and/or property impacts for temporary tracks
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Higher	• Eliminates light rail grade crossings for both lines • More opportunities for special trackwork and connections between West Seattle and Ballard lines	Lower	• Difficult to include interconnection between lines and pocket tracks • Longer track connection to OMF
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Comparable	• Reduced length of cut-and-cover tunnel (approximately 1,400 feet less); no Royal Brougham cut-and-cover • Less elevated guideway, including reduction in ground improvements • No elevated pocket track • SODO Station at-grade, not elevated • Two Stadium Stations, one on each line; one new, one existing with additional vertical circulation likely • "S" Development ROW needs similar to ST3 Representative Project • Roadway overcrossing costs	Lower	• Long-span crossing of BNSF requires special structures • Property impacts for crossing from Spokane Street to Occidental and from Occidental to E-3 • Longer OMF connection with associated ROW needs
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of high access to opportunity	Higher	• Increases access to SODO employment area for historically underserved populations in other parts of region
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Existing station locations	Comparable	• Stations consistent with ST3 plan and local land use plans

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

SODO Segment – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			Surface E-3		Occidental Avenue	
			Rating	Evaluation	Rating	Evaluation
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• Comparable to ST3 Representative Project	Comparable	• Station locations outside of designated urban center/village similar to ST3 Representative Project
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Higher	• Available space for active bays and transit access; no layovers needed • Two Stadium stations allow for increased rail/rail connections	Lower	• Reduced connectivity between existing and new SODO stations
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Comparable to ST3 Representative Project	Higher	• Better access to regional bicycle facilities • Located in more pedestrian-friendly environment compared with ST3 Representative Project
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Limited likelihood for redevelopment based on existing zoning	Comparable	• Limited likelihood for redevelopment based on existing zoning
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• No identified impacts to protected natural resources • Located in critical area for liquefaction prone soils (Seattle Environmentally Critical Areas [ECA])	Comparable	• No identified impacts to protected natural resources • Located in critical area for liquefaction prone soils (Seattle Environmentally Critical Areas [ECA])
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential impacts to National Register of Historic Places (NRHP) listed INS Building	Comparable	• Potential impacts to National Register of Historic Places (NRHP) listed INS Building
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Higher	• Potential traffic impacts from potential permanent closure of Royal Brougham Way • Eliminates existing light rail grade crossings with roadway grade separations at Lander and Holgate; roadway grade separations may impact local property access	Lower	• Potential temporary and permanent impacts to traffic circulation due to elevated guideway in street ROW
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Higher	• Removal of at-grade crossings at Lander and Holgate would benefit freight mobility • Removal of at-grade crossing at Lander and Holgate could change property access • Freight could be affected by changes in traffic patterns during construction and potential closure of Royal Brougham	Lower	• Potential temporary and permanent impacts to truck freight mobility due to elevated guideway in street ROW
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Higher	• Low potential for business displacements • Businesses could be affected by changes in traffic patterns during construction and potential closure of Royal Brougham, but to lesser degree • No permanent access impacts expected	Lower	• Potential temporary and permanent impacts to business access due to elevated guideway in street ROW

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

SODO Segment – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives	
			6th Avenue	
			Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3				
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand				
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Consistent with ST3 Representative Project
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project (approximately 23,700)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan				
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center (MIC) served (Duwamish)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Consistent with Sound Transit Long-Range Plan
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain				
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Lower	• Does not provide all required special trackwork for connectivity between West Seattle and Ballard lines
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Greater engineering constraints related to difficult connection to OMF and braiding of lines near Stadium Station • No need to relocate overhead transmission lines for majority of corridor (transmission lines may need to be relocated at Spokane Street where alignment crosses over to 6th Avenue) • Reduces impact to E-3 busway and avoids impacts to E-3 busway paired with Massachusetts tunnel portal option • High elevated guideway over existing elevated guideway at Forest Street and associated ground improvements presents greater engineering challenges • More traffic and property impacts with alignment on 6th versus E-3 busway • Property impacts with transitions to SODO Station

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

SODO Segment – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives	
			6th Avenue	
			Rating	Evaluation
Financial Sustainability	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Lower	• Greater constructability challenges associated with maintenance of traffic and parking impacts during construction in 6th Avenue due to likely displacement of travel lanes and/or parking during construction • Challenging construction phasing in Ryerson Base/Stadium Station area due to braiding of West Seattle and Ballard lines • Challenging construction of high elevated guideway and associated ground improvements over existing Forest Street structure; could require disruption to existing LRT service
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Lower	• Difficult to include interconnection between lines and pocket tracks • Difficult connection to OMF
	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Comparable	• Similar to ST3 Representative Project
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations				
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of high access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies				
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Existing station locations
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• Existing station locations outside of designated urban center/village comparable to ST3 Representative Project
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Available space for active bays and transit access; no layovers needed
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Comparable to ST3 Representative Project
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Limited likelihood for redevelopment based on existing zoning
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices				
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• No identified impacts to protected natural resources • Located in critical area for liquefaction prone soils (Seattle Environmentally Critical Areas [ECA])
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential impacts to National Register of Historic Places (NRHP) listed INS Building

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

SODO Segment – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives	
			6th Avenue	
			Rating	Evaluation
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Lower	• Potential temporary and permanent impacts to traffic circulation due to elevated guideway in street ROW
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Lower	• Potential temporary and permanent impacts to freight mobility due to elevated guideway in street ROW
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Lower	• Potential temporary and permanent impacts to business access due to elevated guideway in street ROW

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

APPENDIX C

Downtown Segment and International District/Chinatown Station
Level 1 Evaluation Matrices

Downtown Segment – Level 1 Alternatives Evaluation

	Evaluation Criteria and Measures																								
	Reliable Service	Travel Times	Regional Connectivity	Transit Capacity	Projected Transit Demand	Regional Centers Served	ST Long Range Plan Consistency	Mode, Route, and Station Locations (per ST3)	Potential ST3 Operating Plan Effects	Engineering Constraints	Constructability Issues	Operational Constraints	Qualitative Capital Cost Comparison	Historically Underserved Populations	Station Land Use Plan Consistency	Station Proximity to Urban Centers/Villages	Bus/Rail Integration	Bicycle/Pedestrian Connectivity	Station Area Development Potential	Protected Natural Resources	Protected Built/Social Environment	Burden on Underserved Populations	Traffic Circulation/Access	Freight Access	Business/ Commerce
ST3 Representative Project (Baseline)	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
5th/Harrison	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
5th/Mercer	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	○	◑	○	◑	◑	◑	◑	◑	◑	○	◑	◑	○	○	◑
6th/Boren/Roy	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	●	◑	○	◑	◑	○	◑	○	◑	○	◑	◑	◑	◑	◑
8th/6th/Republican	◑	◑	○	○	◑	◑	◑	○	◑	○	○	◑	○	◑	◑	○	◑	○	◑	◑	◑	◑	◑	◑	◑
5th/Roy/Consolidated SLU Station	◑	◑	◑	◑	◑	◑	◑	○	◑	●	●	◑	●	◑	◑	○	◑	○	◑	○	◑	◑	●	◑	◑

● Higher Performance	◑ Comparable Performance	○ Lower Performance

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Downtown Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (5th/6th/Republican)		5th/Harrison	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time approximately 7 to 8 minutes for route alignment within Downtown Segment	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Facilitates spine segmentation	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Includes new light rail tunnel through downtown	Comparable	• Includes new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project (approximately 258,600)	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 1% less than ST3 Representative Project (approximately 256,600)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• 3 regional growth centers served (Seattle Central Business District [CBD], South Lake Union, Uptown)	Comparable	• 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Consistent with Sound Transit Long-Range Plan	Comparable	• Consistent with Sound Transit Long-Range Plan
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Baseline for comparison	Comparable	• Consistent with ST3 Representative Project
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Constraints include right-of-way (ROW), major utilities and traffic operations • Requires relocation of a major stretch of 72-inch sewer • South Lake Union Station located under SR 99 off ramp • North tunnel portal has property constraints	Comparable	• Constraints include ROW and traffic operations • Conflicts with 72-inch sewer crossing • Alignment goes under Key Arena • North tunnel portal has similar property constraints • South Lake Union Station avoids SR 99 off-ramp • Protection of 60-inch sewer crossing located above tunnel

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Downtown Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (5th/6th/Republican)		5th/Harrison	
			Rating	Evaluation	Rating	Evaluation
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• Tunnel portal near International District/Chinatown Station and mining through tie-backs create constructability issues • Approximately 700 linear feet of 72-inch sewer line above South Lake Union Station needs to be relocated • Westlake Station on 6th Avenue abutting existing Westlake Station at 90 degrees	Lower	• Tunnel portal near International District/Chinatown Station and mining through tie-backs create constructability issues • Less sewer line conflicts along Harrison • Potential conflict with the 72-inch sewer crossing • Proximity to new Key Arena expansion • New Westlake Station on 5th Avenue directly under existing Westlake Station, making it more challenging to construct
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• Baseline operational performance	Comparable	• Similar to ST3 Representative Project
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Comparable	• Tunnel alignment approximately 16,000 feet long • Six underground tunnel stations • ROW needed at the north portal • Requires relocation of approximately 700 linear feet of 72-inch sewer	Comparable	• Shorter tunnel alignment (approximately 700 linear feet shorter) • ROW needs at the north portal similar to ST3 Representative Project • Potential complex relocation of 72-inch sewer
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of high access to opportunity	Comparable	• All stations located in areas of high access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• All six stations located in areas with supportive local land use plans	Comparable	• All six stations located in areas with supportive local land use plans
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• All six stations located within Urban Centers and/or Villages	Comparable	• All six stations located within Urban Centers and/or Villages
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Minimal bus interaction at International District/Chinatown, Midtown, and Westlake stations • Available active bays at Denny, South Lake Union, and Seattle Center stations • Limited South Lake Union Station bus access to SR 99	Comparable	• Minimal bus interaction at International District/Chinatown, Midtown, and Westlake stations • Available active bays and transit access at Denny, South Lake Union, and Seattle Center stations • Better access to SR 99 buses at South Lake Union Station
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• All stations have access to multiple existing and planned in-street bicycle facilities, including Westlake Trail and 2nd Avenue cycletrack • Steep grades east and west of Midtown and Westlake stations; grade increases to north towards Queen Anne • Man-made barriers include I-5 to east	Comparable	• Similar to ST3 Representative Project
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Approximately 1,650 acres have potential for development opportunities	Comparable	• Similar to ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Downtown Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (5th/6th/Republican)		5th/Harrison	
			Rating	Evaluation	Rating	Evaluation
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• No identified impacts to protected natural resources	Comparable	• No identified impacts to protected natural resources
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential residential displacements from station and tunnel portals • Potential neighborhood impacts from station and tunnel portal construction • Potential impacts to multiple historic properties, historic district and parks	Comparable	• Potential residential displacements from station and tunnel portals • Potential neighborhood impacts from station and tunnel portal construction • Potential impacts to multiple historic properties, historic district and parks
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to Chinatown/International District neighborhood during construction	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to Chinatown/International District neighborhood during construction
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Comparable	• Potential impacts during station and tunnel portal construction	Comparable	• Potential impacts during station and tunnel portal construction
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Comparable	• Freight could be affected by changes in traffic patterns during construction	Comparable	• Freight could be affected by changes in traffic patterns during construction
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Comparable	• Potential for some business displacements • Potential for disruption to businesses during construction around station areas and tunnel portals	Comparable	• Potential for some business displacements • Potential for disruption to businesses during construction around station areas and tunnel portals

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Downtown Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			5th/Mercer		6th/Boren/Roy	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Includes new light rail tunnel through downtown	Comparable	• Includes new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	**Higher Performance** = 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 1% greater than ST3 Representative Project (approximately 260,800)	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 4% greater than ST3 Representative Project (approximately 267,800)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown)	Comparable	• 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Consistent with Sound Transit Long-Range Plan	Comparable	• Consistent with Sound Transit Long-Range Plan
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Lower	• ROW and utility constraints • Mercer Street is high volume traffic arterial connecting to I-5 • Major utility constraints: potential impacts to 176-inch sewer crossing; 48-inch sewer below South Lake Union Station; and impacts 72-inch sewer crossing • North tunnel portal has less ROW constraints • North tunnel portal is located near steep slopes	Comparable	• South Lake Union Station constraints would be less–Roy is a less travelled roadway and further away from SR 99 off ramp • Potential relocation of 72-inch sewer crossing and requires protection of 84-inch, 48-inch and 176-inch sewers • North tunnel portal has less ROW constraints • North tunnel portal is located near steep slopes

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Downtown Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			5th/Mercer		6th/Boren/Roy	
			Rating	Evaluation	Rating	Evaluation
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Lower	• Tunnel portal near International District/Chinatown Station and mining through tie-backs at Columbia Tower create constructability issues • New Westlake Station on 5th Avenue directly under existing Westlake Station, making it more challenging to construct • Maintenance of traffic would be more difficult due to higher traffic volumes connecting to I-5 • Sewer line conflicts are greater: requires relocation of 72-inch sewer and potential relocation of 176-inch sewer at crossing; relocation of 48-inch sewer; and challenging to protect 176-inch sewer during construction, especially at station location • Geotechnical concerns building next to steep slope	Higher	• No need to mine through tie-backs at Columbia Tower but need to construct under Washington State Department of Transportation (WSDOT) walls along I-5 • Sewer line conflicts along Roy would be less • Westlake Station on 6th Avenue; similar to ST3 Representative Project • South Lake Union Station avoids SR 99 off-ramp • North tunnel portal construction has fewer impacts on ROW • Geotechnical concerns building next to steep slope
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• Similar to ST3 Representative Project	Comparable	• Longer curve lengths increase operational speed; but operationally similar to ST3 Representative Project
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Lower	• Greater utility impacts: protection and potential relocation of 176-inch sewer at crossing; relocation of 72-inch sewer; and potential relocation of 48-inch sewer • Potential impacts to major infrastructure on Mercer (recently constructed arterial) • More extensive construction staging and maintenance of traffic on Mercer • Longer tunnel alignment (approximately 1,800 linear feet longer) • Less ROW impacts at north tunnel portal	Lower	• Longer tunnel alignment (approximately 2,000 linear feet longer) • Less ROW impacts at north tunnel portal • Less utility impacts
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of high access to opportunity	Comparable	• All stations located in areas of high access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• All six stations located in areas with supportive local land use plans	Comparable	• All six stations located in areas with supportive local land use plans
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• All six stations located within Urban Centers and/or Villages	Lower	• Five stations located within Urban Centers and/or Villages; one located on border (Seattle Center Station at Roy Street)
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Minimal bus interaction at International District/Chinatown, Midtown, and Westlake stations • Available active bays and transit access at Denny, South Lake Union, and Seattle Center stations • Limited South Lake Union Station bus access to SR 99	Comparable	• Minimal bus interaction at International District/Chinatown, Midtown, and Westlake stations • Reduced access to buses/streetcar on Westlake • Better access to buses on SR 99 at South Lake Union Station • Further away from Seattle Center bus routes
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Similar to ST3 Representative Project	Lower	• Similar to ST3 Representative Project, except greater grade difference to north (Queen Anne) affects two station locations (South Lake Union and Seattle Center)

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Downtown Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			5th/Mercer		6th/Boren/Roy	
			Rating	Evaluation	Rating	Evaluation
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Similar to ST3 Representative Project	Comparable	• Similar to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Lower	• Potential impact to steep slopes and wildlife habitat in Kinnear Park (Section 4(f) resource)	Lower	• Potential impact to steep slopes and wildlife habitat in Kinnear Park (Section 4(f) resource)
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential residential displacements from station and tunnel portals • Potential neighborhood impacts from station and tunnel portal construction • Potential impacts to multiple historic properties, historic district, and parks	Comparable	• Potential residential displacements from station and tunnel portals • Potential neighborhood impacts from station and tunnel portal construction • Potential impacts to multiple historic properties, historic district, and parks
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to Chinatown/International District neighborhood during construction	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to Chinatown/International District neighborhood during construction
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Lower	• Station and tunnel portal construction on Mercer Street more disruptive than ST3 Representative Project due to heavy traffic volumes	Comparable	• Potential impacts during station and tunnel portal construction • Midtown Station location avoids construction impacts to 5th Avenue, but increases impacts to 6th Avenue
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Lower	• Freight could be affected by changes in traffic patterns during construction; more disruptive than ST3 Representative Project due to station construction on Mercer Street	Comparable	• Freight could be affected by changes in traffic patterns during construction
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Comparable	• Potential for some business displacements • Potential disruption to businesses during construction around station areas and tunnel portals	Comparable	• Potential for some business displacements • Potential disruption to businesses during construction around station areas and tunnel portals

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Downtown Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			8th/6th/Republican		5th/Roy/Consolidated South Lake Union Station	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project; faster average speed due to one less station
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Lower	• Creates additional passenger loads at International District/Chinatown and Westlake stations, which affects distribution of passengers between two downtown tunnels and spine segmentation	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Lower	• Includes new light rail tunnel through downtown, but creates additional passenger loads at International District/Chinatown and Westlake stations	Comparable	• Includes new light rail tunnel through downtown
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 4% greater than ST3 Representative Project (approximately 267,700)	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 3% less than ST3 Representative Project (approximately 249,900)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown) • Midtown Station serves First Hill/Capitol Hill regional growth center, but not identified or analyzed in ST3 Plan	Comparable	• 3 regional growth centers served (Seattle CBD, South Lake Union, Uptown)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Consistent with Sound Transit Long-Range Plan	Comparable	• Consistent with Sound Transit Long-Range Plan
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Lower	• First Hill Station not identified or analyzed in *ST3 Plan*	Lower	• Consolidating stations not identified or analyzed in *ST3 Plan*
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Lower	• Two under crossings of I-5 • Sewer conflicts and tunnel portal issues similar to ST3 Representative Project	Higher	• Potential relocation of 72-inch sewer crossing and requires protection of 84-inch, 48-inch and 176-inch sewers • North tunnel portal has less ROW constraints • North tunnel portal is located near steep slope • Constraints would be less–Roy is further away from SR 99 off ramp and fewer utility impacts

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Downtown Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			8th/6th/Republican		5th/Roy/Consolidated South Lake Union Station	
			Rating	Evaluation	Rating	Evaluation
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Lower	• Westlake Station on 6th Avenue abutting existing Westlake Station at 90 degrees; similar to ST3 Representative Project • Deep tunnel station (approximately 160 feet deep) • Two crossings of I-5 present high-risk and construction considerations • Unknown soil conditions	Higher	• New Westlake Station on 5th Avenue directly under existing Westlake Station, making it more challenging to construct; however, removing a station results in less construction issues • Sewer line conflicts along Roy would be less • South Lake Union Station avoids SR 99 off-ramp • North tunnel portal construction has fewer impacts on ROW • Geotechnical concerns building next to steep slope
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• Tighter curves reduce design speed but operationally comparable to ST3 Representative Project	Comparable	• Removes one station but operationally comparable to ST3 Representative Project
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Lower	• Longer tunnel alignment (approximately 600 linear feet longer) • North tunnel portal location has less ROW impacts and utility impacts • Requires two crossings under I-5 • Unknown soil conditions under I-5 and east of I-5 • Deep station location (approximately 40 feet deeper) requires more vertical circulation	Higher	• Longer tunnel alignment (approximately 1,800 linear feet longer), but one less station; consolidating stations not identified or analyzed in *ST3 Plan* • North tunnel portal location has less ROW impacts • Potentially less utility impacts
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of high access to opportunity	Comparable	• All stations located in areas of high access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• All six stations located in areas with supportive local land use plans	Comparable	• All five stations located in areas with supportive local land use plans
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Lower	• Five stations within Urban Centers and/or Villages • Midtown Station located in different Urban Center/Village than designated in ST3 plan	Lower	• Four stations within Urban Center and/or Villages; one on border (Seattle Center Station at Roy Street)
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Minimal bus interaction at International District/Chinatown, First Hill, and Westlake stations • First Hill poor connections to north/south bus routes but good connections with Madison Bus Rapid Transit (BRT) • Available active bays and transit access at Denny, South Lake Union, and Seattle Center stations • Limited South Lake Union Station bus access to SR 99	Comparable	• Minimal bus interaction at International District/Chinatown, Midtown, and Westlake stations • Consolidated station not as convenient to buses on Denny, Dexter, or SR 99, but bus service can be re-routed • Further away from Seattle Center bus routes
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have more access to existing and planned pedestrian and bicycle networks and limited grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks and limited grade differences within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks and limited grade differences within station areas	Lower	• Similar to ST3 Representative Project, except greater grade difference at east and west of Midtown Station (east of I-5) that connects to heart of commercial core and First Hill	Lower	• Similar to ST3 Representative Stations, except greater grade difference to north (Queen Anne)
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Similar to ST3 Representative Project	Comparable	• Similar to ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Downtown Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			8th/6th/Republican		5th/Roy/Consolidated South Lake Union Station	
			Rating	Evaluation	Rating	Evaluation
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• No identified impacts to protected natural resources	Lower	• Potential impact to steep slopes and wildlife habitat in Kinnear Park (Section 4(f) resource)
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential residential displacements from station and tunnel portals • Potential neighborhood impacts from station and tunnel portal construction • Potential impacts to multiple historic properties, historic district, and parks	Comparable	• Potential residential displacements from station and tunnel portals • Potential neighborhood impacts from station and tunnel portal construction • Potential impacts to multiple historic properties, historic district, and parks
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to Chinatown/International District neighborhood during construction	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk • Potential impacts to Chinatown/International District neighborhood during construction
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Comparable	• Potential impacts during station and tunnel portal construction • Midtown Station location avoids construction impacts to 5th Avenue, but increases impacts to 8th Avenue	Higher	• Potential impacts during station and tunnel portal construction • Less disruptive than ST3 Representative Project due to one fewer station
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Comparable	• Freight could be affected by changes in traffic patterns during construction	Comparable	• Freight could be affected by changes in traffic patterns during construction
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Comparable	• Potential for some business displacements • Potential for disruption to businesses during construction around station areas and tunnel portals	Comparable	• Potential for some business displacements • Potential for disruption to businesses during construction around station areas and tunnel portals

C-ID Station – Additional Level 1 Alternatives Evaluation

Evaluation Criteria and Measures

	Reliable Service	Travel Times	Regional Connectivity	Transit Capacity	Projected Transit Demand	Regional Centers Served	ST Long Range Plan Consistency	Mode, Route, and Station Locations (per ST3)	Potential ST3 Operating Plan Effects	Engineering Constraints	Constructability Issues	Operational Constraints	Qualitative Capital Cost Comparison	Historically Underserved Populations	Station Land Use Plan Consistency	Station Proximity to Urban Centers/Villages	Bus/Rail Integration	Bicycle/Pedestrian Connectivity	Station Area Development Potential	Protected Natural Resources	Protected Built/Social Environment	Burden on Underserved Populations	Traffic Circulation/Access	Freight Access	Business/ Commerce
5th Ave Cut-and-Cover Tunnel and Station (ST3 Baseline)	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
5th Ave Bored Tunnel / Cut-and-Cover Station	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	●	◑	◑	◑
5th Ave Bored Tunnel / Mined Station	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	○	◑	○	◑	◑	◑	◑	◑	◑	◑	◑	●	◑	◑	◑
4th Ave Cut-and-Cover Tunnel and Station	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	○	◑	○	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	○	○
4th Ave Bored Tunnel / Mined Station	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	○	◑	○	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	○	○
Union Station Bored Tunnel / Mined Station	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	○	◑	○	◑	◑	◑	◑	◑	◑	◑	◑	●	◑	◑	◑

● Higher Performance ◑ Comparable Performance ○ Lower Performance

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

C-ID Station – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			5th Avenue Cut-and-Cover Tunnel and Station (ST3 Baseline)		5th Avenue Bored Tunnel/Cut-and-Cover Station	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Baseline for comparison	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Facilitates spine segmentation	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Includes new light rail tunnel through downtown	Comparable	• Consistent with ST3 Representative Project
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations approximately 51,300	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project (approximately 51,300)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional growth center served (Seattle Central Business District [CBD])	Comparable	• One regional growth center served (Seattle CBD)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Consistent with Sound Transit Long-Range Plan	Comparable	• Consistent with Sound Transit Long-Range Plan
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
Technical Feasibility	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Baseline for comparison	Comparable	• Similar to ST3 Representative Project
	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Cut-and-cover tunnel and station design in limited street right-of-way (ROW) • Cut-and-cover tunnel in street from Seattle Boulevard to Main Street; tunnel boring machine (TBM) portal at Main Street • Design of connections to existing International District/Chinatown Station with existing pile foundations	Comparable	• Bored and cut-and-cover tunnels and station design in limited street ROW • Design of connections to existing International District/Chinatown Station with existing pile foundations • Pile supported 5th Avenue retaining wall extends to Main Street; may require cut-and-cover extended to Main Street or advance removal of structure

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

C-ID Station – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			5th Avenue Cut-and-Cover Tunnel and Station (ST3 Baseline)		5th Avenue Bored Tunnel/Cut-and-Cover Station	
			Rating	Evaluation	Rating	Evaluation
Financial Sustainability	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• Cut-and-cover tunnel and station construction in limited street ROW • Cut-and-cover tunnel in-street from Seattle Boulevard to Main Street; TBM portal at Main Street	Comparable	• Bored and cut-and-cover tunnels and station construction in limited street ROW • Pile supported 5th Avenue retaining wall extends to Main Street; may require cut-and-cover extended to Main Street or advance removal of structure
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• Baseline operational performance	Comparable	• Similar to ST3 Representative Project
	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Comparable	• Baseline for comparison	Comparable	• Similar to ST3 Representative Project
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• Station located in area of high access to opportunity	Comparable	• Station located in area of high access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Station located in area with supportive local land use plans	Comparable	• Station located in area with supportive local land use plans
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• Station located within Urban Center	Comparable	• Station located within Urban Center
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Minimal bus interaction • Good rail-to-rail integration with existing International District/Chinatown Station	Comparable	• Minimal bus interaction • Good rail-to-rail integration with existing International District/Chinatown Station
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Access to multiple existing and planned in-street bicycle facilities • Man-made barriers include Burlington Northern-Santa Fe (BNSF) Railway tracks and busy arterials	Comparable	• Access to multiple existing and planned in-street bicycle facilities • Man-made barriers include BNSF tracks and busy arterials
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Baseline for comparison	Comparable	• Similar to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• No identified impacts to protected natural resources	Comparable	• No identified impacts to protected natural resources

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

C-ID Station – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			5th Avenue Cut-and-Cover Tunnel and Station (ST3 Baseline)		5th Avenue Bored Tunnel/Cut-and-Cover Station	
			Rating	Evaluation	Rating	Evaluation
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential residential displacements from station construction • Potential neighborhood impacts from station construction • Potential impacts to multiple historic properties, historic district and parks	Comparable	• Potential residential displacements from station construction • Potential neighborhood impacts from station construction • Potential impacts to multiple historic properties, historic district and parks
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and station located in areas with similar low-income and minority populations as rest of the city • Station located in areas of low to moderate displacement risk • Potential impacts to Chinatown/International District neighborhood during construction	Higher	• Alignment and station located in areas with similar low-income and minority populations as rest of the city • Station located in areas of low to moderate displacement risk • Reduced impacts to Chinatown/International District neighborhood during construction due to bored tunnel
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Comparable	• Potential impacts during station construction	Comparable	• Potential impacts during station construction
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Comparable	• Truck freight could be affected by changes in traffic patterns during construction	Comparable	• Truck freight could be affected by changes in traffic patterns during construction
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Comparable	• Potential for some business displacements • Potential for disruption to businesses during construction around station area	Comparable	• Potential for some business displacements • Potential for disruption to businesses during construction around station area

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

C-ID Station – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			5th Avenue Bored Tunnel/Mined Station		4th Avenue Cut-and-Cover Tunnel and Station	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Projected Transit Demand	Ridership potential	**Higher Performance** = 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project (approximately 51,300)	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 4% lower than ST3 Representative Project (approximately 49,000)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional growth center served (Seattle CBD)	Comparable	• One regional growth center served (Seattle CBD)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Consistent with Sound Transit Long-Range Plan	Comparable	• Consistent with Sound Transit Long-Range Plan
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Similar to ST3 Representative Project	Comparable	• Similar to ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

C-ID Station – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			5th Avenue Bored Tunnel/Mined Station		4th Avenue Cut-and-Cover Tunnel and Station	
			Rating	Evaluation	Rating	Evaluation
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Lower	• More challenging engineering issues for deep bored tunnel and mined station • Challenging to design connections from deep mined station to existing International District/Chinatown Station with existing pile foundations	Lower	• 4th Avenue viaduct rebuild would require complex design and close coordination with City of Seattle • Longer stretch of in-street cut-and-cover tunnel on more heavily traveled arterial as compared to 5th Avenue • More challenging engineering for cut-and-cover tunnel under existing at-grade guideway at Royal Brougham • Engineering challenge for modifications to Yesler Way bridge and coordination with City of Seattle • More challenging issues due to proximity to existing Downtown Seattle Transit Tunnel (DSTT); must design to minimize impacts to DSTT • More challenging engineering associated with modifications to I-90 ramps and coordination with Washington State Department of Transportation (WSDOT) • Challenging to design connections from new station to King Street Station under BNSF tracks and International District/Chinatown Station with existing pile foundations under Union Station
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Lower	• More challenging construction of deep bored tunnel and mined station, as well as connections to existing International District/Chinatown Station	Lower	• Challenging construction of new 4th Avenue viaduct for multiple blocks north and south of Jackson Street, followed by new station underneath rebuilt viaduct • Limited construction staging area around 4th Avenue Station area would contribute to challenging construction • Maintenance of traffic/traffic re-routing from 4th Avenue during construction would be challenging due to high volumes of general purpose traffic and bus transit on 4th Avenue • Challenging construction of WSDOT I-90 ramps and City of Seattle Yesler Way structure modifications • Construction of new tunnel above existing DSTT would be challenging due to limited clearance between tunnels • Potential temporary service disruption on existing Link light rail lines during construction above DSTT
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• Similar to ST3 Representative Project	Comparable	• Similar to ST3 Representative Project
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Lower	• Deep mined station and long vertical access elements	Lower	• Addition of 4th Avenue viaduct rebuild
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• Station located in area of high access to opportunity	Comparable	• Station located in area of high access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Station located in area with supportive local land use plans	Comparable	• Station located in area with supportive local land use plans

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

C-ID Station – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			5th Avenue Bored Tunnel/Mined Station		4th Avenue Cut-and-Cover Tunnel and Station	
			Rating	Evaluation	Rating	Evaluation
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• Station located within Urban Center	Comparable	• Station located within Urban Center
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Minimal bus interaction • Good rail-to-rail integration with existing International District/Chinatown Station	Comparable	• Minimal bus interaction • Potential improvement in rail-to-rail integration with commuter rail; integration with International District/Chinatown Station potentially degraded
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Access to multiple existing and planned in-street bicycle facilities • Man-made barriers include BNSF tracks and busy arterials	Comparable	• Access to multiple existing and planned in-street bicycle facilities • Man-made barriers include BNSF tracks and busy arterials
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Similar to ST3 Representative Project	Comparable	• Similar to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• No identified impacts to protected natural resources	Comparable	• No identified impacts to protected natural resources
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential residential displacements from station construction • Potential neighborhood impacts from station construction • Potential impacts to multiple historic properties, historic district and parks	Comparable	• Potential residential displacements from station construction • Potential neighborhood impacts from station construction • Potential impacts to multiple historic properties, historic district and parks
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Higher	• Alignment and station located in areas with similar low-income and minority populations as rest of the city • Station located in areas of low to moderate displacement risk • Reduced impacts to Chinatown/International District neighborhood during construction due to bored tunnel and mined station	Comparable	• Alignment and station located in areas with similar low-income and minority populations as rest of the city • Station located in areas of low to moderate displacement risk • Reduced impacts to Chinatown/International District neighborhood during construction offset by increased traffic due to re-routed 4th Avenue traffic
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Comparable	• Potential impacts during station construction	Lower	• Increased traffic impacts during construction due to re-routed 4th Avenue
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Comparable	• Truck freight could be affected by changes in traffic patterns during construction	Lower	• Increased truck freight mobility impacts during construction due to re-routed 4th Avenue
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Comparable	• Potential for some business displacements • Potential for disruption to businesses during construction around station area	Lower	• Degraded access to businesses during construction due to re-routed 4th Avenue

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

C-ID Station – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			4th Avenue Bored Tunnel/Mined Station		Union Station Bored Tunnel/Mined Station	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated	Comparable	• Fully grade separated
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 4% lower than ST3 Representative Project (approximately 49,000)	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 3% lower than ST3 Representative Project (approximately 49,900)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional growth center served (Seattle CBD)	Comparable	• One regional growth center served (Seattle CBD)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Consistent with Sound Transit Long-Range Plan	Comparable	• Consistent with Sound Transit Long-Range Plan
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Similar to ST3 Representative Project	Comparable	• Similar to ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

C-ID Station – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			4th Avenue Bored Tunnel/Mined Station		Union Station Bored Tunnel/Mined Station	
			Rating	Evaluation	Rating	Evaluation
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Lower	• 4th Avenue viaduct rebuild would require complex design and close coordination with City of Seattle • Challenging bored tunnel design under existing at-grade guideway at Royal Brougham to avoid disruption of existing line • Challenging design of modifications to I-90 ramps and coordination with WSDOT • Challenging design of modifications to Yesler Way bridge and coordination with City of Seattle • Challenging to design connections from new station to King Street Station under BNSF tracks and International District/Chinatown Station with existing pile foundations under Union Station	Lower	• Challenging design of deep bored tunnel below pile foundation roadways (Seattle Boulevard) and buildings • Feasibility issues with design of deep mined station under Union Station • Challenging bored tunnel design under existing at-grade guideway at Royal Brougham to avoid disruption of existing line • Challenging design of modifications to I-90 ramps and coordination with WSDOT • Feasibility issues with design connections from new deep mined station to King Street Station under 4th Avenue viaduct piles and BNSF tracks and to International District/Chinatown Station with existing pile foundations under Union Station
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Lower	• Challenging construction of new 4th Avenue viaduct • Limited construction staging area around 4th Avenue station area would contribute to challenging construction • Maintenance of traffic/traffic re-routing from 4th Avenue during construction would be challenging due to high volumes of general purpose traffic and bus transit on 4th Avenue • Challenging construction of Washington State Department of Transportation I-90 ramps	Lower	• Feasibility issues with construction of deep mined station under Union Station and adjacent buildings to south • Feasibility issues with protection of landmark historic structure of Union Station during construction • Limited construction staging area around Union Station increases construction challenge/feasibility
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• Similar to ST3 Representative Project	Comparable	• Similar to ST3 Representative Project
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Lower	• Addition of 4th Avenue viaduct rebuild • Longer bored tunnel	Lower	• Deep mined station construction under Union Station • Longer bored tunnel
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• Station located in area of high access to opportunity	Comparable	• Station located in area of high access to opportunity
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Station located in area with supportive local land use plans	Comparable	• Station located in area with supportive local land use plans
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• Station located within Urban Center	Comparable	• Station located within Urban Center
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Minimal bus interaction • Potential improvement in rail-to-rail integration with commuter rail; integration with International District/Chinatown Station potentially degraded	Comparable	• Minimal bus interaction • Potential improvement in rail-to-rail integration with commuter rail; integration with International District/Chinatown Station potentially degraded

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

C-ID Station – Additional Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			4th Avenue Bored Tunnel/Mined Station		Union Station Bored Tunnel/Mined Station	
			Rating	Evaluation	Rating	Evaluation
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have more access to existing and planned pedestrian and bicycle networks and limited grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks and limited grade differences within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks and limited grade differences within station areas	Comparable	• Access to multiple existing and planned in-street bicycle facilities • Man-made barriers include BNSF tracks and busy arterials	Comparable	• Access to multiple existing and planned in-street bicycle facilities • Man-made barriers include BNSF tracks and busy arterials
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Similar to ST3 Representative Project	Comparable	• Similar to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• No identified impacts to protected natural resources	Comparable	• No identified impacts to protected natural resources
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential residential displacements from station construction • Potential neighborhood impacts from station construction • Potential impacts to multiple historic properties, historic district and parks	Comparable	• Potential residential displacements from station construction • Potential neighborhood impacts from station construction • Potential impacts to multiple historic properties, historic district and parks
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and station located in areas with similar low-income and minority populations as rest of the city • Station located in areas of low to moderate displacement risk • Reduced impacts to Chinatown/International District neighborhood during construction offset by increased traffic due to re-routed 4th Avenue traffic	Higher	• Alignment and station located in areas with similar low-income and minority populations as rest of the city • Station located in areas of low to moderate displacement risk • Reduced impacts to Chinatown/International District neighborhood during construction
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Lower	• Increased traffic impacts during construction due to re-routed 4th Avenue	Comparable	• Potential impacts during station construction
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Lower	• Increased truck freight mobility impacts during construction due to re-routed 4th Avenue	Comparable	• Truck freight could be affected by changes in traffic patterns during construction
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Lower	• Degraded access to businesses during construction due to re-routed 4th Avenue	Comparable	• Potential for some business displacements • Potential for disruption to businesses during construction around station area

APPENDIX D

Interbay/Ballard Segment
Level 1 Evaluation Matrices

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Evaluation Criteria and Measures

	Reliable Service	Travel Times	Regional Connectivity	Transit Capacity	Projected Transit Demand	Regional Centers Served	ST Long Range Plan Consistency	Mode, Route, and Station Locations (per ST3)	Potential ST3 Operating Plan Effects	Engineering Constraints	Constructability Issues	Operational Constraints	Qualitative Capital Cost Comparison	Historically Underserved Populations	Station Land Use Plan Consistency	Station Proximity to Urban Centers/Villages	Bus/Rail Integration	Bicycle/Pedestrian Connectivity	Station Area Development Potential	Protected Natural Resources	Protected Built/Social Environment	Burden on Underserved Populations	Traffic Circulation/Access	Freight Access	Business/ Commerce
ST3 Representative Project (Baseline)	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑	◑
Elliott/15th / 16th / Fixed Bridge	●	◑	◑	●	◑	◑	◑	◑	●	◑	●	●	○	◑	◑	◑	●	◑	◑	◑	◑	◑	◑	◑	◑
West of BNSF / 20th / 17th / Fixed Bridge	●	◑	◑	●	◑	◑	◑	◑	●	◑	◑	●	○	◑	◑	●	◑	◑	◑	◑	◑	◑	●	●	●
West of BNSF / 20th / 17th / Tunnel	●	◑	◑	●	◑	◑	●	◑	●	○	◑	●	○	◑	◑	●	◑	◑	◑	●	●	◑	●	●	●
East of BNSF/14th/Movable Bridge	◑	◑	◑	◑	○	◑	◑	◑	◑	◑	◑	◑	◑	◑	○	○	◑	○	○	◑	◑	◑	●	◑	●
Elliott/Armory Way/14th/Tunnel	●	◑	◑	●	◑	◑	●	◑	●	◑	◑	●	○	◑	○	○	◑	◑	○	●	●	◑	●	●	●
West of BNSF / 20th / Tunnel	●	◑	◑	●	◑	◑	○	◑	●	○	◑	●	○	◑	◑	●	◑	◑	◑	●	●	◑	●	●	●

● Higher Performance	◑ Comparable Performance	○ Lower Performance

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (Elliott/15th/Movable Bridge)		Elliott/15th/16th/Fixed Bridge	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated with movable bridge	Higher	• Fully grade separated with no movable bridge
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time approximately 5 minutes for route alignment within Interbay/Ballard Segment	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Facilitates regional connectivity	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Baseline for comparison	Higher	• Reliability of fixed bridge supports carrying capacity in downtown
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project (approximately 40,500)	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations similar to ST3 Representative Project (approximately 40,300)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center served (Ballard-Interbay)	Comparable	• One regional manufacturing/industrial center served (Ballard-Interbay)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Elevated station on a north-south alignment at NW Market Street; a connected eastward extension per Long-Range Plan could involve surface disruption, while an independent extension could cause more modest disruption	Comparable	• Similar profile, location and orientation as ST3 Representative Project
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Movable bridge would affect system operations; requires additional special trackwork for movable bridge	Higher	• Fixed bridge facilitates reliable system operations; requires less special trackwork
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Engineering constraints include overhead distribution power poles, column construction in roadway median, construction of elevated stations over roadway and at W Dravus Street interchange, and multiple pier construction in waterway	Comparable	• Engineering constraints similar to ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (Elliott/15th/Movable Bridge)		Elliott/15th/16th/Fixed Bridge	
			Rating	Evaluation	Rating	Evaluation
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• Guideway pier construction along Elliott and 15th Avenues adjacent to live traffic on roadway • At-grade segment requires walls with tie-backs along hillside to reduce risk of landslide hazards • Station location at W Dravus Street interchange impacts interchange operations and may require reconstruction of roadways • Constrained column locations through Nickerson Interchange • Constrained construction of movable bridge close to existing Ballard Bridge • Impacts to maritime vessel traffic, and fishing window restrictions for bridge pier construction in Salmon Bay • Elevated guideway piers would impact several properties in Ballard west of 15th Avenue • Deep drilled shaft foundations at south bank of Salmon Bay in liquefiable soils • Elevated station and tail track located in busy corner of NW 15th and NW Market with several property acquisitions • Construction mitigation to maintain freight access west of 15th Avenue	Higher	• Same as ST3 Representative Project for majority of alignment, but has lesser complexity of constructing Interbay Station away from Dravus Street interchange • Location of elevated waterway crossing farther away from existing Ballard Bridge • Less construction complexity of guideway north of Salmon Bay outside of 15th Avenue NW
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• Movable bridge clearance assumed at 70 feet with majority of vessels passing without bridge opening; however, it would have an impact on system-wide operations	Higher	• Fixed bridge does not require openings for vessel traffic
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Comparable	• Total length of alignment approximately 18,000 feet • Elevated guideway with approximately 2,000-foot movable bridge crossing of Salmon Bay • At grade with walls and tiebacks along hillside near Magnolia Bridge • W Dravus Street bridge may require improvements for pedestrian access • All elevated stations with mezzanine levels	Lower	• Total length of alignment approximately 800 feet longer than ST3 Representative Project • Elevated guideway with approximately 2,600-foot fixed bridge crossing of Salmon Bay • Potentially greater property acquisitions
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of moderate access to opportunity • Interbay Station located near Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)	Comparable	• All stations located in areas of moderate access to opportunity • Interbay Station located slightly farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Limited planning conducted at Smith Cove Station and some recent planning efforts at Interbay • Recent planning efforts at Ballard Station include the *Urban Design and Transportation Framework* and a multimodal transportation plan (*Move Ballard*), both developed in anticipation of light rail	Comparable	• Limited planning conducted at Smith Cove Station and some recent planning efforts at Interbay • Similar to ST3 Representative Project, supportive planning conducted at Ballard Station
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Comparable	• Ballard Station within but on edge of Ballard Hub Urban Village • Smith Cove Station on border of Uptown Urban Center • Interbay Station not within a designated Urban Center/Village	Comparable	• Ballard Station within but on edge of Ballard Hub Urban Village
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• All stations would likely require minimal to no route diversion • Interbay station would likely not accommodate layover and bus transfers would require street crossings	Higher	• Provides potentially better bus/rail integration at Interbay station but requires route diversion • Bus/rail integration at Smith Cove and Ballard Stations similar to ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (Elliott/15th/Movable Bridge)		Elliott/15th/16th/Fixed Bridge	
			Rating	Evaluation	Rating	Evaluation
Station Area Development Opportunities	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Smith Cove Station near Elliott Bay Trail but access to trail limited • Ballard Station near Burke Gilman Trail • Man-made and natural barriers include Salmon Bay (accessible only at bridges) and Burlington Northern-Santa Fe (BNSF) Railway tracks to west of Interbay Station • Grade challenges east and west of Interbay and Smith Cove stations	Comparable	• Similar access opportunities and challenges as ST3 Representative Project • Grade differentials at Interbay and Smith Cove stations similar to ST3 Representative Project
	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Approximately 500 acres have potential for development opportunities; ST3 Representative Project has lowest amount of land zoned Manufacturing/Industrial	Comparable	• Comparable to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• Piers in Salmon Bay would require permits and mitigation for impacts to waters of the U.S., fish habitat, commercial fishing, subsistence fishing, and tribal treaty fishing • Affects steep slopes in West Queen Anne open space (geology and wildlife impact) • Mostly avoids potential liquefaction areas (Seattle Environmentally Critical Areas [ECA])	Comparable	• Piers in Salmon Bay would require permits and mitigation for impacts to waters of the U.S., fish habitat, commercial fishing, subsistence fishing, and tribal treaty fishing, but fewer piers than ST3 Representative Project due to longer spans • Affects steep slopes in West Queen Anne open space (geology and wildlife impact) • Greater length in potential liquefaction areas than ST3 Representative Project
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Potential for impacts to West Queen Anne open space (park/trail) • Within 1000-foot methane buffer for Interbay abandoned landfill (Seattle ECA) • Crosses over Ship Canal Trail • Potential for contamination along most of corridor (historic industrial uses both on land and in water) • Displaces National Historic Register of Places (NHRP) eligible buildings on east side of Elliott • Potential for visual impacts from higher bridge than current Ballard Bridge • Potential neighborhood impacts (visual, noise and construction) along 15th Avenue W and 15th Avenue NW	Comparable	• Potential for impacts to West Queen Anne open space (park/trail) • Potential for direct and/or constructive use of Interbay Athletic Complex under Section 4(f) • Within 1000-foot methane buffer for Interbay abandoned landfill (Seattle ECA) • Crosses over Ship Canal Trail • Potential for contamination along most of corridor (historic industrial uses both on land and in water) • Displaces NHRP-eligible buildings on east side of Elliott • Potential residential displacements from Interbay Station • Potential for visual impacts from higher bridge than current Ballard Bridge • Potential neighborhood impacts (visual, noise and construction) along 15th Avenue W and 15th Avenue NW
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Comparable	• Potential construction traffic impacts on 15th Avenue W, Elliott Avenue W, 15th Avenue NW, and Dravus interchange • Potential permanent restrictions on property access and changes to traffic circulation along length of alignment • Potential for long-term capacity reduction to 15th Avenue W	Comparable	• Potential construction traffic impacts on 15th Avenue W, Elliott Avenue W, 15th Avenue NW, and NW Market Street • Potential permanent restrictions on property access and changes to traffic circulation along length of alignment • Avoids Dravus interchange
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Comparable	• Potential changes to Elliott and 15th Avenue W/NW, a major truck route, could affect freight movement and mobility (permanent and construction) • Piers in Salmon Bay could require changes in navigation for freight vessels or types of vessels that could use docks closest to Ballard Bridge	Comparable	• Potential changes to Elliott and 15th Avenue W, a major truck route could affect freight movement and mobility (permanent and construction), but potentially less than ST3 Representative Project • Piers in Salmon Bay could require changes in navigation for freight vessels or types of vessels that could use docks near Ballard Bridge, but potentially less than ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			ST3 Representative Project (Elliott/15th/Movable Bridge)		Elliott/15th/16th/Fixed Bridge	
			Rating	Evaluation	Rating	Evaluation
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Comparable	• Potential business displacements for Smith Cove Station and alignment on east side of Elliott Avenue W • Potential economic impacts to Fishermen's Terminal and commercial fishing (permanent and construction) • Potential business displacements for alignment and station in Ballard • Potential impacts to businesses along alignment during construction	Comparable	• Potential business displacements for Smith Cove Station and alignment on east side of Elliott Avenue W • Potential for greater business displacements for Interbay Station • Potential economic impacts to Fishermen's Terminal and commercial fishing (permanent and construction) • Potential business displacements for alignment and station in Ballard • Potential impacts to businesses along alignment during construction

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			West of BNSF/20th/17th/Fixed Bridge		West of BNSF/20th/17th/Tunnel	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Higher	• Fully grade separated with no movable bridge	Higher	• Fully grade separated with no movable bridge
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Higher	• Reliability of fixed bridge supports carrying capacity in downtown	Higher	• Reliability of tunnel supports carrying capacity in downtown
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 10% less than ST3 Representative Project (approximately 36,400)	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 14% less than ST3 Representative Project (approximately 34,800); however, the station locations are within similar population and employment areas as alternatives considered comparable and Ballard Station is located within the Ballard core
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center served (Ballard-Interbay)	Comparable	• One regional manufacturing/industrial center served (Ballard-Interbay)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Similar profile, location and orientation as ST3 Representative Project	Higher	• Tunnel profile reduces surface impact • Station location and northeasterly orientation reduces length of a connected or independent extension
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Higher	• Fixed bridge facilitates reliable system operations; requires less special trackwork	Higher	• Tunnel facilitates reliable system operations; requires less special trackwork
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Avoids Elliott Avenue W and 15th Avenue W/NW • Constrained width between BNSF railroad and properties along west side of Elliott Avenue W • Long span crossings of BNSF railroad • Constrained width of right-of-way (ROW) between Port of Seattle and BNSF railroad properties north of Magnolia Bridge	Lower	• Avoids Elliott Avenue W and 15th Avenue W/NW • Constrained width between BNSF railroad and properties along west side of Elliott Avenue W • Long span crossings of BNSF railroad • Constrained width of ROW between Port of Seattle and BNSF railroad properties north of Magnolia Bridge • Constrained space for tunnel portal between BNSF railroad and 20th Avenue W • Large diameter combined sewer overflow (CSO) in Shilshole Avenue

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			West of BNSF/20th/17th/Fixed Bridge		West of BNSF/20th/17th/Tunnel	
			Rating	Evaluation	Rating	Evaluation
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• Avoids Elliott Avenue W and 15th Avenue W/NW • Long skewed elevated guideway crossing over live BNSF railroad tracks • Elevated structure with deep shafts in liquefiable soils near Magnolia Bridge • Elevated station and tail track construction in busy corner of 17th Ave NW and NW Market Street	Comparable	• Avoids Elliott Avenue W and 15th Avenue W/NW • Long skewed elevated crossing over live BNSF railroad tracks • Elevated structure with deep shafts in liquefiable soils near Magnolia Bridge • Tunnel under W Dravus Street may require reconstruction of bridge end spans • Tunnel portal construction in proximity to BNSF railroad yard constrained • Tunnel crossing avoids in water work • Tunnel under Salmon Bay could require cross-passage construction • Tunnel would also require cut-and-cover construction for underground Ballard Station • Potentially greater property acquisitions
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Higher	• Fixed bridge does not require openings for vessel traffic	Higher	• Tunnel does not impact operations
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Lower	• Total length of alignment approximately 200 feet longer than ST3 Representative Project • Long span bridge crossing of BNSF railroad • Elevated structure over W Galer Street and Magnolia Bridge • Ground improvements for guideway structure foundations • Approximately 4,800 feet of elevated guideway, which includes 2,200-foot fixed bridge crossing of Salmon Bay, between BNSF railroad at Gilman Avenue W and NW Market Street • Potentially greater property acquisitions	Lower	• Total length of alignment approximately 400 feet shorter than ST3 Representative Project • Long span bridge crossing of BNSF railroad • Elevated structure over W Galer Street and Magnolia Bridge • Ground improvements for elevated guideway structure foundations • Approximately 7,400 feet of tunnel with underground station • Potentially greater property acquisitions • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)	Comparable	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Limited planning conducted at Smith Cove Station and some recent planning efforts at Interbay • Similar to ST3 Representative Project, supportive planning conducted at Ballard Station	Comparable	• Limited planning conducted at Smith Cove Station and some recent planning efforts at Interbay • Similar to ST3 Representative Project, supportive planning conducted at Ballard Station
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Higher	• Ballard Station more centrally located within Ballard Hub Urban Village than ST3 Representative Project	Higher	• Ballard Station more centrally located within Ballard Hub Urban Village than ST3 Representative Project
	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Bus/rail integration at Smith Cove and Ballard Stations similar to ST3 Representative Project • Potentially limited bus/rail integration at Interbay Station	Comparable	• Bus/rail integration at Smith Cove and Ballard Stations similar to ST3 Representative Project • Potentially limited bus/rail integration at Interbay Station
Modal Integration	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Smith Cove Station similar to ST3 Representative Project • Grade difference at Interbay Station similar to ST3 Representative Project • Similar access considerations to Burke Gilman Trail as ST3 Representative Project • Similar man-made and natural barriers as ST3 Representative Project	Comparable	• Smith Cove Station similar to ST3 Representative Project • Grade difference at Interbay Station similar to ST3 Representative Project • Similar access considerations to Burke Gilman Trail as ST3 Representative Project • Similar man-made and natural barriers as ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			West of BNSF/20th/17th/Fixed Bridge		West of BNSF/20th/17th/Tunnel	
			Rating	Evaluation	Rating	Evaluation
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Similar to ST3 Representative Project	Comparable	• Similar to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• Piers in Salmon Bay would require permits and mitigation for impacts to waters of the U.S., fish habitat, commercial fishing, subsistence fishing, and tribal treaty fishing, but fewer piers than ST3 Representative Project • Majority of alignment within potential liquefaction area (Seattle ECA) • Avoids West Queen Anne greenbelt habitat and steep slopes	Higher	• Avoids in water work and associated permits • Majority of alignment within potential liquefaction area (Seattle ECA) • Avoids West Queen Anne greenbelt habitat and steep slopes
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Crosses over Ship Canal Trail • Potential for contamination along most of corridor (historic industrial uses both on land and in water) • Potential residential displacements in Ballard • Potential for visual impacts from new bridge in area with no bridge currently • Within 1000-foot methane buffer for Interbay abandoned landfill (Seattle ECA) • Potential for neighborhood impacts (visual, noise and construction) impacts along 20th Avenue W • Potential for proximity impacts to Ballard Avenue Historic District/Landmark District	Higher	• Avoids crossing over Section 4(f)/6(f) resources • Potential for contamination along most of corridor (historic industrial uses both on land and in water) • Reduced potential for residential displacements in Ballard • Within 1000-foot methane buffer for Interbay abandoned landfill (Seattle ECA)
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Higher	• Potential construction traffic impacts on Elliott Avenue W, 20th Avenue W, W Dravus Street, and in Ballard core • Avoids potential impacts to 15th Avenue W and 15th Avenue NW	Higher	• Potential construction traffic impacts on Elliott Avenue W, 20th Avenue W, W Dravus Street, and at 20th Avenue NW and NW Market Street for station • Avoids potential impacts to 15th Avenue W and 15th Avenue NW
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Higher	• Crosses BNSF tracks and Magnolia Bridge • Avoids potential disruption on Elliott and 15th Avenue W/NW • Piers in Salmon Bay could require changes in navigation for freight vessels	Higher	• Crosses BNSF tracks and Magnolia Bridge • Avoids potential disruption on Elliott and 15th Avenue W/NW • Avoids potential changes in navigation in Salmon Bay
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Higher	• Potential business and commerce displacements in Smith Cove and Ballard, including potential effects to Terminal 91 • Avoids potential business displacements in Interbay • Potential economic impacts to commercial fishing during construction • Avoids potential direct impacts to Fishermen's Terminal • Potential impacts to businesses along alignment during construction	Higher	• Potential business and commerce displacements in Smith Cove, including potential effects to Terminal 91 • Avoids potential business displacements in Interbay • Fewer potential business displacements in Ballard due to underground alignment • Avoids potential direct impacts to Fishermen's Terminal

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			East of BNSF/14th/Movable Bridge		Elliott/Armory Way/14th/Tunnel	
			Rating	Evaluation	Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3						
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Comparable	• Fully grade separated with movable bridge	Higher	• Fully grade separated with no movable bridge
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand						
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Consistent with ST3 Representative Project	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Comparable	• Comparable to ST3 Representative Project with movable bridge	Higher	• Reliability of tunnel supports carrying capacity in downtown
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Lower	• Total 2040 population and employment within 0.5-mile buffer of stations 21% less than ST3 Representative Project (approximately 32,000), as the Smith Cove Station is located further from higher population and employment areas	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 11% less than ST3 Representative Project (approximately 35,900); however, the station locations are within similar population and employment areas as alternatives considered comparable
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan						
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center served (Ballard-Interbay)	Comparable	• One regional manufacturing/industrial center served (Ballard-Interbay)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Comparable	• Ballard Station location results in less surface impact and reduces length of an elevated extension compared to ST3 Representative Project; however, an independent extension could require more surface disruption than ST3 Representative Project to co-locate stations	Higher	• Tunnel profile reduces surface impact • Ballard Station location reduces length of a connected extension; logistics of an independent extension similar to ST3 Representative Project
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain						
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Comparable	• Movable bridge would affect system operations; requires special trackwork for movable bridge	Higher	• Tunnel facilitates reliable system operations; requires less special trackwork
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Comparable	• Avoids Elliott Ave W and 15th Avenue W/NW • Engineering constraints include existing Interbay pump station and large diameter CSO; Magnolia Bridge piers; BNSF railroad and landfill	Comparable	• Avoids Elliott Ave W and 15th Avenue W/NW • Tunnel portal area not constrained • Large diameter CSO; BNSF railroad and landfill; Nickerson interchange bridge foundations; large diameter CSO in Shilshole Avenue

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			East of BNSF/14th/Movable Bridge		Elliott/Armory Way/14th/Tunnel	
			Rating	Evaluation	Rating	Evaluation
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• Avoids Elliott Avenue W and 15th Avenue W/NW • Alignment constrained between BNSF railroad and properties west of Elliott Ave W • Potential relocation of Interbay CSO pump station • Ground improvements for liquefiable soils in Interbay • Alignment constrained between BNSF railroad tracks and large diameter CSO • Proximity to landfill area under golf course may require mitigation • Guideway under existing Magnolia Bridge could require partial bridge reconstruction • Movable bridge crossing further away from existing Ballard Bridge • Elevated guideway piers in center of 14th Avenue may impact parking	Comparable	• Avoids Elliott Avenue W and 15th Avenue W/NW • Alignment at grade through Smith Cove Station • Alignment constrained between BNSF railroad tracks and large diameter CSO • Ground improvements for liquefiable soils in Interbay • Tunnel crossing avoids in water work • Proximity to landfill area under golf course may require mitigation • Tunnel under Salmon Bay could require cross-passage construction • Tunnel would also require cut-and-cover construction for underground Ballard Station
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Comparable	• Movable bridge clearance assumed at 70 feet with majority of vessels passing without bridge opening; however, it would have an impact on system-wide operations	Higher	• Tunnel does not impact operations
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Comparable	• Total length of alignment approximately 1,000 feet shorter than ST3 Representative Project • At grade guideway between Elliott Avenue and Smith Cove Station • Potential reconstruction of Magnolia Bridge • Ground improvements for foundations along BNSF railroad • Potential landfill impact mitigation • Partially elevated and partially retained fill guideway between CSO and landfill • Approximately 1,500-foot movable bridge crossing of Salmon Bay • Potential for property acquisitions	Lower	• Total length of alignment approximately 1,600 feet shorter than ST3 Representative Project • At grade guideway between W Roy Street and Smith Cove Station and along hillside • Potential roadway reconstruction at Armory Way • Approximately 6,000 feet of tunnel with underground station • Potential for property acquisitions • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations						
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)	Comparable	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies						
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Lower	• Minimal planning for Smith Cove Station (south of Magnolia Bridge) • Ballard Station located on 14th Avenue NW on edge of planning area; planning efforts assume density and development west of this location	Lower	• Minimal planning for Smith Cove Station though a station in this location would better serve planned Expedia campus • Ballard Station located on 14th Avenue NW on edge of planning area; planning efforts assume density and development west of this location
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Lower	• Stations located outside of designated Urban Centers/Villages	Lower	• Stations located outside of designated Urban Centers/Villages
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Potentially limited bus/rail integration at Smith Cove and Ballard Stations • Provides potentially better bus/rail integration at Interbay station but requires route diversion	Comparable	• Bus/rail integration at Smith Cove similar to ST3 Representative Project Potentially limited bus/rail integration at Ballard Station • Provides potentially better bus/rail integration at Interbay station but requires route diversion
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Lower	• Comparable to ST3 Representative Project except access to Smith Cove Station is more limited from points east • Grade difference at Interbay Station similar to ST3 Representative Project but access more limited • Similar access considerations to Burke Gilman Trail as ST3 Representative Project • Similar man-made and natural barriers as ST3 Representative Project	Comparable	• Less grade difference at Interbay Station than ST3 Representative Project but access more limited • Similar access considerations to Burke Gilman Trail as ST3 Representative Project • Similar man-made and natural barriers as ST3 Representative Project

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives			
			East of BNSF/14th/Movable Bridge		Elliott/Armory Way/14th/Tunnel	
			Rating	Evaluation	Rating	Evaluation
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Lower	• More land zoned Manufacturing/Industrial (over 250 acres more than ST3 Representative Project)	Lower	• More land zoned Manufacturing/Industrial (over 100 acres more than ST3 Representative Project)
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices						
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Comparable	• Piers in Salmon Bay would require permits and mitigation for impacts to waters of the U.S., fish habitat, commercial fishing, subsistence fishing, and tribal treaty fishing, but fewer piers than ST3 Representative Project due to shorter crossing distance • Majority of alignment within potential liquefaction area (Seattle ECA) • Avoids West Queen Anne greenbelt habitat and steep slopes	Higher	• Avoids in-water work in Salmon Bay and associated permits • Majority of alignment within potential liquefaction area (Seattle ECA) • Affects steep slopes in West Queen Anne open space (geology and wildlife impact)
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Comparable	• Crosses over Ship Canal Trail and 14th Avenue NW Boat Ramp (Section 4(f)/6(f) resources) • Potential for contamination along most of corridor (historic industrial uses both on land and in water) • Potential disturbance of old Interbay landfill • Within 1000-foot methane buffer for Interbay abandoned landfill (Seattle ECA) • Lower potential for visual and noise impacts because mostly traveling through light industrial areas • Lower potential residential displacements	Higher	• Avoids crossing over Section 4(f)/6(f) facilities • Reduced potential residential displacements in Ballard • Potential for contamination along most of corridor (historic industrial uses both on land and in water) • Potential disturbance of old Interbay landfill • Within 1000-foot methane buffer for Interbay abandoned landfill (Seattle ECA) • Lower potential for visual and noise impacts because mostly traveling through light industrial areas and in tunnel
	Burden on historically underserved populations	**Higher Performance** = Would have a lessen burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Higher	• Construction and potential circulation and access impacts on 14th Avenue NW (low volumes, predominantly local trips, wide ROW) • Potential construction impacts to Magnolia Bridge and Emerson interchange • Avoids potential impacts to 15th Avenue W and 15th Avenue NW	Higher	• Potential for circulation impacts/modifications along Armory Way and Dravus crossing • Potential for circulation impacts/modifications to 14th Avenue W • Avoids potential impacts to 15th Avenue W and 15th Avenue NW
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Comparable	• Avoids potential disruption on Elliott and 15th Avenue W/NW, a major truck route • Piers in Salmon Bay could require changes in navigation for freight vessels • Potential changes to 14th Avenue W., could affect freight movement	Higher	• Avoids potential disruption on Elliott and 15th Avenue W/NW, a major truck route • Avoids potential impacts to freight vessels • Potential changes along 14th Avenue W, near Ballard station, could affect freight movements
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Higher	• Potential displacements of light industrial businesses in Smith Cove, Interbay, and Ballard • Avoids potential direct impacts to Fishermen's Terminal	Higher	• Potential displacements of light industrial businesses in Interbay and Ballard, but lower because in tunnel and wide ROW on 14th Avenue NW • Avoids potential direct impacts to Fishermen's Terminal

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives	
			West of BNSF/20th/Tunnel	
			Rating	Evaluation
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the project corridors defined in ST3				
Reliable Service	Potential service interruptions and recoverability	**Higher Performance** = More grade separation **Comparable Performance** = Grade separation and reliability consistent with ST3 Representative Project **Lower Performance** = Less grade separation	Higher	• Fully grade separated with no movable bridge
Travel Times	LRT travel times	**Higher Performance** = Travel time approximately 25% faster than ST3 Representative Project **Comparable Performance** = Travel time consistent with ST3 Representative Project **Lower Performance** = Travel time approximately 25% slower than ST3 Representative Project	Comparable	• Travel time comparable to ST3 Representative Project
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand				
Regional Connectivity	Network integration and operational flexibility to meet future demand	**Higher Performance** = Facilitates additional connectivity and operational flexibility beyond spine segmentation **Comparable Performance** = Facilitates spine segmentation for operational flexibility consistent with ST3 Representative Project **Lower Performance** = Does not facilitate spine segmentation	Comparable	• Consistent with ST3 Representative Project
Transit Capacity	Passenger carrying capacity in downtown	**Higher Performance** = Includes new light rail tunnel through downtown with additional improvements **Comparable Performance** = Includes new light rail tunnel through downtown consistent with ST3 Representative Project **Lower Performance** = Does not include new light rail tunnel through downtown	Higher	• Reliability of tunnel supports carrying capacity in downtown
Projected Transit Demand	Ridership potential	**Higher Performance** = More than 10% greater than ST3 Representative Project **Comparable Performance** = Between 10% less and 10% greater than ST3 Representative Project **Lower Performance** = More than 10% less than ST3 Representative Project	Comparable	• Total 2040 population and employment within 0.5-mile buffer of stations 10% less than ST3 Representative Project (approximately 36,400)
Connect regional centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan				
Regional Centers Served	Station proximity to PSRC-designated regional centers	**Higher Performance** = Serves more PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project **Comparable Performance** = Serves PSRC-designated regional growth centers and manufacturing/industrial centers consistent with ST3 Representative Project **Lower Performance** = Serves fewer PSRC-designated regional growth centers and manufacturing/industrial centers than ST3 Representative Project	Comparable	• One regional manufacturing/industrial center served (Ballard-Interbay)
ST Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	**Higher Performance** = A future LRT extension per Sound Transit Long-Range Plan more feasible and more direct than ST3 Representative Project **Comparable Performance** = A future LRT extension per Sound Transit Long-Range Plan feasible, consistent with ST3 Representative Project **Lower Performance** = A future LRT extension per Sound Transit Long-Range Plan would have major challenges	Lower	• Tunnel profile reduces surface impact but alignment location could require a longer future extension, potentially adding travel time, complexity and cost
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain				
ST3 Consistency	Mode, route, and general station locations per ST3	**Higher Performance** = Not applicable **Comparable Performance** = Mode, route and general station locations consistent with ST3 Representative Project and/or System Plan **Lower Performance** = Mode, route and general station locations not consistent with ST3 Representative Project and/or System Plan	Comparable	• Mode, route and general station locations consistent with ST3 system plan
	Potential ST3 operating plan effects	**Higher Performance** = Facilitates special trackwork and/or provides reliable system operations **Comparable Performance** = Facilitates special trackwork and/or system operations consistent with ST3 Representative Project **Lower Performance** = Does not facilitate special trackwork and/or degrades system operations	Higher	• Tunnel facilitates reliable system operations; requires less special trackwork
Technical Feasibility	Engineering constraints	**Higher Performance** = Minimal engineering constraints, compliance with applicable codes, design guidelines and regulatory requirements **Comparable Performance** = Engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements consistent with ST3 Representative Project **Lower Performance** = Substantial engineering constraints, compliance with applicable codes, design guidelines, and regulatory requirements	Lower	• Avoids Elliott Ave W and 15th Avenue W/NW • Constrained width between BNSF railroad and properties along west side of Elliott Avenue W • Long span crossings of BNSR railroad • Constrained width of ROW between the Port of Seattle and BNSF railroad properties north of Magnolia Bridge • Constrained space for tunnel portal between BNSF railroad and 20th Avenue W • Large diameter CSO in Shilshole Avenue and King County Siphon crossing under Salmon Bay

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives	
			West of BNSF/20th/Tunnel	
			Rating	Evaluation
	Constructability issues	**Higher Performance** = Lower construction complexity (e.g., minimal utility conflicts, building impacts, permit requirements, required schedule, geotechnical constraints, tunnel/station constructability, and construction staging/phasing) **Comparable Performance** = Construction complexity consistent with ST3 Representative Project **Lower Performance** = Higher construction complexity	Comparable	• Long skewed elevated crossing over live BNSF railroad tracks • Elevated structure with deep shafts in liquefiable soils near Magnolia Bridge • Tunnel under W Dravus Street requires reconstruction of bridge end spans • Tunnel crossing avoids in water work • Tunnel under Salmon Bay could require cross-passage construction • Tunnel construction under Historic District requires settlement monitoring • 20th Avenue NW ROW facilitates tunnel station construction • Tunnel would also require cut-and-cover construction for underground Ballard Station • Potentially greater property acquisitions
	Operational constraints	**Higher Performance** = Optimum operational characteristics (e.g., operating efficiency and flexibility) **Comparable Performance** = Operational characteristics consistent with ST3 Representative Project **Lower Performance** = Poor operational characteristics	Higher	• Tunnel does not impact operations
Financial Sustainability	Qualitative capital cost comparison	**Higher Performance** = Capital cost drivers anticipated to be less than ST3 Representative Project **Comparable Performance** = Capital cost drivers anticipated to be consistent with ST3 Representative Project **Lower Performance** = Capital cost drivers anticipated to be greater than ST3 Representative Project	Lower	• Total length of alignment approximately 400 feet longer than ST3 Representative project • Long span bridge crossing of BNSF railroad • Elevated structure over W Galer Street and Magnolia Bridge • Ground Improvements for elevated guideway structure foundations for seismic design • Approximately 8,200 feet of tunnel with underground station • Potentially greater property acquisitions • Tunnel costs not included in ST3 financial plan or evaluation methodology
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations				
Historically Underserved Populations	Opportunities for historically underserved populations	**Higher Performance** = Higher access to opportunities for historically underserved populations **Comparable Performance** = Access to opportunities for historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Lower access to opportunities for historically underserved populations	Comparable	• All stations located in areas of moderate access to opportunity • Interbay Station located farther from Census block groups with slightly above average low-income populations (possibly because of proximity to Seattle Pacific University)
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies				
Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	**Higher Performance** = Station locations have greater consistency with local land use plans **Comparable Performance** = Station locations have consistency with local land use plans consistent with ST3 Representative Project **Lower Performance** = Station locations have less consistency with local land use plans	Comparable	• Limited planning conducted at Smith Cove Station and some recent planning efforts at Interbay • Similar to ST3 Representative Project, supportive planning conducted at Ballard Station
	Station proximity to Seattle-designated Urban Centers and Villages	**Higher Performance** = Station locations closer to center of single or combined Seattle-designated Urban Centers and Villages **Comparable Performance** = Station locations at a similar distance to center of single or combined Seattle-designated Urban Centers and Villages consistent with ST3 Representative Project **Lower Performance** = Stations locations further from center of single or combined Seattle-designated Urban Centers and Villages	Higher	• Ballard Station more centrally located within Ballard Hub Urban Village than ST3 Representative Project
Modal Integration	Bus/rail and rail/rail integration	**Higher Performance** = Better opportunities for active bays, layover and/or less route diversion **Comparable Performance** = Opportunities for active bays, layover and/or less route diversion consistent with ST3 Representative Project **Lower Performance** = Fewer opportunities for active bays, layover and/or more route diversion	Comparable	• Bus/rail integration at Smith Cove similar to ST3 Representative Project • Potentially limited bus/rail integration at Interbay and Ballard Stations

"Higher Performance" = Higher performance relative to ST3 Representative Project; "Comparable Performance" = Comparable performance relative to ST3 Representative Project; "Lower Performance" = Lower performance relative to ST3 Representative Project

Interbay/Ballard Segment – Level 1 Alternatives Evaluation

Criteria	Measure	Rating Threshold	Alternatives	
			West of BNSF/20th/Tunnel	
			Rating	Evaluation
	Bicycle, pedestrian and persons with limited mobility connectivity	**Higher Performance** = Station locations have better access to existing and planned pedestrian and bicycle networks with few barriers and less grade differences within station areas **Comparable Performance** = Station locations have access to existing and planned pedestrian and bicycle networks within station areas consistent with ST3 Representative Project **Lower Performance** = Station locations have less access to existing and planned pedestrian and bicycle networks with more barriers and/or grade differences within station areas	Comparable	• Smith Cove Station similar to ST3 Representative Project • Grade difference at Interbay Station similar to ST3 Representative Project • Similar access considerations to Burke Gilman Trail as ST3 Representative Project • Similar man-made and natural barriers as ST3 Representative Project
Station Area Development Opportunities	Development potential	**Higher Performance** = Half-mile (0.5 mile) station area includes greater amount of land with compatible zoning for future development (over 10% more) **Comparable Performance** = Half-mile (0.5 mile) station area includes amount of land with compatible zoning for future development consistent with ST3 Representative Project **Lower Performance** = Half-mile (0.5 mile) station area includes lesser amount of land with compatible zoning for future development (over 10% less)	Comparable	• Comparable to ST3 Representative Project
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, built and social environments through sustainable practices				
Environmental Effects	Protected natural resources	**Higher Performance** = Minimal to no potential impacts on natural protected resources (e.g., wetlands, waterbodies, critical areas) **Comparable Performance** = Potential impacts on natural protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to natural protected resources	Higher	• Avoids in water work and associated permits • Majority of alignment within potential liquefaction area (Seattle ECA) • Avoids West Queen Anne greenbelt habitat and steep slopes
	Protected built and social environment	**Higher Performance** = Minimal to no potential impacts on built and social protected resources (e.g., parks, cultural resources, contaminated sites) **Comparable Performance** = Potential impacts on built and social protected resources consistent with ST3 Representative Project **Lower Performance** = Substantial regulatory process for impacts to built and social protected resources and/or substantial residential or business displacements	Higher	• Avoids crossing over Section 4(f)/6(f) trails • Potential for contamination along most of corridor (historic industrial uses both on land and in water) • Within 1000-foot methane buffer for Interbay abandoned landfill (Seattle ECA) • Avoids potential residential displacements in Ballard
	Burden on historically underserved populations	**Higher Performance** = Would have a lesser burden on historically underserved population than ST3 Representative Project **Comparable Performance** = Would have potential to impact historically underserved populations consistent with ST3 Representative Project **Lower Performance** = Would have a greater burden on historically underserved population than ST3 Representative Project	Comparable	• Alignment and stations located in areas with similar low-income and minority populations as rest of the city • Stations located in areas of low to moderate displacement risk
Traffic Operations	Traffic circulation and access	**Higher Performance** = Few to no changes in traffic patterns and/or access **Comparable Performance** = Changes to traffic patterns and/or access consistent with ST3 Representative Project **Lower Performance** = Substantial impacts to traffic circulation and/or access, mitigation likely requires substantial road improvements	Higher	• Potential construction traffic impacts on Elliott Avenue W, 20th Avenue W, W Dravus Street, and at 20th Avenue NW and NW Market Street for cut-and-cover station • Avoids potential impacts to 15th Avenue W and 15th Avenue NW
Economic Effects	Freight movement and access on land and water	**Higher Performance** = Minimal effects to freight mobility and future freight capacity expansion opportunities **Comparable Performance** = Effects to freight mobility and future freight capacity expansion opportunities consistent with ST3 Representative Project **Lower Performance** = Substantial effects to freight mobility and future freight capacity expansion opportunities	Higher	• Crosses BNSF tracks and Magnolia Bridge • Avoids potential disruption on Elliott and 15th Avenue W/NW • Avoids potential changes in navigation in Salmon Bay
	Business and commerce effects	**Higher Performance** = Minimal effects on local businesses, as well as commercial and industrial areas **Comparable Performance** = Effects on local businesses, as well as commercial and industrial areas consistent with ST3 Representative Project **Lower Performance** = Substantial effects on local businesses, as well as commercial and industrial areas	Higher	• Potential business and commerce displacements in Smith Cove, including potential effects to Terminal 91 • Avoids potential business displacements in Interbay • Fewer potential business displacements in Ballard due to underground alignment • Avoids potential direct impacts to Fishermen's Terminal

APPENDIX E

Stakeholder Advisory Group
Meeting Summaries (4/24/18 and 7/16/18)

West Seattle and Ballard Link Extensions
Stakeholder Advisory Group Meeting #4 – April 24, 2018
Meeting Summary

Agenda Item #1 – Welcome and introductions

Diane Adams, Facilitator, welcomed the Stakeholder Advisory Group (SAG) members to the group's fourth meeting. She noted that the meeting was the second part of the Level 1 alternatives evaluation discussion with the goal of meeting #4 being to reach a recommendation on which alternatives should and should not be carried forward into Level 2 screening.

Agency directors, project leads and staff in attendance were:

- Cathal Ridge, Central Corridor Director, Sound Transit
- Diane Adams, Facilitator
- Jim Parsons, Consultant Project Manager, HNTB
- Ron Endlich, Project Director, Sound Transit
- Kate Lichtenstein, Senior Project Manager, Sound Transit
- Stephen Mak, High Capacity Transit Development Manager, Sound Transit
- Leda Chahim, Government & Community Relations Manager, Sound Transit
- Carrie Avila-Mooney, Government & Community Relations Manager, Sound Transit
- Andrea Burnett, Community Outreach Supervisor, Sound Transit
- Sandra Fann, High Capacity Transit Development Manager, Sound Transit
- Wesley King, Central Corridor Operations Director, Sound Transit
- Jeanne Krikawa, Station Area Planning, The Underhill Company
- Dennis Sandstrom, External Engagement, EnviroIssues

SAG members in attendance were:

- Abigail Doerr, Transportation Choices Coalition
- Andres Arjona, Community Representative – Ballard
- Brian King, Community Representative – West Seattle
- Bryce Yadon, Futurewise
- Colleen Echohawk, Chief Seattle Club
- Deb Barker, Community Representative – West Seattle
- Erin Goodman, SODO Business Improvement Area
- Ginny Gilder, Force 10 Hoops/Seattle Storm
- Greg Nickels, Former Mayor of Seattle
- Hamilton Gardiner, West Seattle Chamber
- Jon Scholes, Downtown Seattle Association
- Julia Park, Community Representative – Ballard
- Larry Yok, Community Representative – Chinatown-International District
- Maiko Winkler-Chin, Seattle Chinatown-International District Preservation & Development Authority
- Mike Stewart, Ballard Alliance
- Peter Schrappen, Northwest Marine Trade Association

- Robert Cardona, Community Representative – Uptown
- Ron Sevart, Space Needle
- Scott Rusch, Fred Hutchinson Cancer Research Center
- Steve Lewis, Alliance of People with disAbilities
- Walter Reese, Nucor Steel
- Warren Aakervik, Community Representative – Freight

NOTE – the following SAG members were not in attendance:

- Becky Asencio, Seattle Public Schools
- Dave Gering, Manufacturing Industrial Council
- Katie Garrow, Martin Luther King Labor Council
- Mark Nagle, Expedia
- Paul Lambros, Plymouth Housing
- Savitha Reddy Pathi, Wing Luke Museum of the Asian Pacific American Experience
- Willard Brown, Delridge Neighborhood Development Association

Agenda Item #2 – Recap of meeting #3

Diane reviewed the meeting summary from the April 17 SAG meeting, which was included in SAG member binders. During the April 17 meeting, SAG members broke up into small groups, and with a facilitator, discussed the following:

- Alternatives for each segment
- Level 1 evaluation measures
- Segment summaries with key findings

Cathal Ridge followed up on the following questions posed during the April 17 SAG meeting:

- ST3 Plan consistency: The voter-approved ST3 Plan identifies the mode, corridor, number of stations and general station locations. Some of the suggestions during Early Scoping were considered not consistent with the plan.
- 3rd Party funding: The potential need for third-party funding is based on qualitative cost assessments. During Level 2 screening, Sound Transit will work to identify quantitative cost estimates. If 3rd party funding is found to be necessary and funding is not identified, some alternatives may ultimately be deemed impractical.

Agenda Item #3 – How we get to a recommendation

Cathal Ridge presented an overview of the process to be used in the meeting to reach a Level 1 recommendation. Starting with the non-practical suggestions raised during early scoping, SAG members would be asked to discuss whether any of the alternatives should be carried forward. Next, SAG members would be asked to discuss the alternatives with greater challenges and determine whether the alternatives should be carried forward and whether there were any suggestions for refinements. Finally, the SAG members would be asked to discuss the alternatives with more potential to identify how they might be refined.

Agenda Item #4 – Level 1 recommendation discussions

SAG members worked in groups of five to seven to discuss the alternatives and summary sheets for each segment, ask any clarification questions, and make recommendations.

Smith Cove, Interbay and Ballard

Kate Lichtenstein, Sound Transit, reviewed the evaluation measures and segment summaries for the Interbay/Ballard segment. See the PowerPoint presentation for additional details about each alternative/suggestion.

- Elliott/15th/16th/Fixed Bridge
- West of BNSF/20th/17th/Fixed Bridge
- East of BNSF/14th/Moveable Bridge
- West of BNSF/20th/17th/Tunnel
- Elliott/Armory Way/14th/Tunnel
- West of BNSF/20th/Tunnel
- Tunnel through Queen Anne/Interbay
- Extensions to 65th/85th/Northgate
- Multi-modal Salmon Bay bridge
- Eliminate or add stations

Questions (Q) and answers (A), comments (C) and refinements (R) from SAG members during the breakout group discussion included the following:

Elliott/15th/16th/Fixed Bridge

Q: How high would a fixed bridge be compared to the existing Ballard Bridge?
A: The existing Ballard Bridge has a clearance of approximately 45 feet high above water; a fixed bridge would likely need to have a clearance of approximately 136 feet to allow for vessel traffic.

R: The alignment on 15th and Elliott Ave should be relocated to avoid traffic and freight impacts.

There was agreement amongst the SAG members to carry this alternative forward.

West of BNSF/20th/17th/Fixed Bridge

Q: Could the light rail tracks go over or under the BNSF yard?
A: This alternative includes an elevated crossing over BNSF property. The "West of BNSF/20th/17th/Tunnel" and "West of BNSF/20th/Tunnel" alternatives include tunneling under BNSF property.

C: Future land use plans in the Interbay area should inform where the station is located.

C: Ensure the stations are in locations that are accessible, especially for people with disabilities.

There was agreement amongst the SAG members to carry this alternative forward.

East of BNSF/14th/Moveable Bridge

Q: How many times per day is the movable bridge expected to be opened?
A: Sound Transit is studying how often a movable bridge would potentially open. Opening frequency depends on the height of the bridge and is potentially affected by the seasons. The ST3 plan assumed a movable bridge of about 70 feet in height which was estimated to open between two and four times per day.

Q: What are the challenges with a 14th Avenue station?
A: The alternatives with a Ballard Station on 14th Avenue are rated lower in terms of development potential because they are currently within industrial-zoned land outside (within one block of) the Ballard Hub Urban Village boundary. However, during recent stakeholder outreach and agency workshops, we have heard ideas about potentially shifting 14th Ave stations further north and northwest, closer to Market Street and 15th Ave. If those shifts were to happen, the stations would potentially be within the Ballard Hub Urban Village boundary and closer to areas zoned for transit-supportive development.

C: Additional analysis needs to be done to determine how much a movable bridge would impact reliability. (Several SAG members expressed concerns about the reliability of a movable bridge.)

R: The Smith Cove station should be located closer to Smith Cove, rather than the cruise ship terminal due to variable seasonal demand.

R: Move the station further north in Ballard, closer to the density and out of the industrial area.

There was agreement amongst the SAG members to carry this alternative forward.

West of BNSF/20th/17th/Tunnel

Q: Could private funding be used?
A: Potentially. Sound Transit will be conducting quantitative cost estimates during Level 2, which may clarify whether 3rd party funding is needed.

C: This alternative has received widespread community support and should be carried forward.

There was agreement amongst the SAG members to carry this alternative forward.

Elliott/Armory Way/14th/Tunnel

C: The station location east of 15th Avenue is not preferred because it is in an industrial area and people would have to cross 15th Avenue to reach old Ballard.

R: Stations should be located close to current and future density in Interbay.

R: Move the station further north in Ballard, closer to the density and out of the industrial area.

There was agreement amongst the SAG members to carry this alternative forward.

West of BNSF/20th/Tunnel

Q: Are there fatal flaws with the 20th Avenue tunnel?
A: Conceptually, it is the longest tunnel and could potentially be the most expensive of the tunnel options.

C: Tunnel stations are preferred because their location is more flexible than above ground stations.

C: This alternative has community support from those who feel the Ballard station should be close to the center of Ballard.

There was a mix of opinions on this alternative, but SAG members agreed to carry this alternative forward.

Tunnel through Queen Anne/Interbay

There was agreement amongst the SAG members to not carry this suggestion forward.

Extensions to 65th/85th/Northgate

C: Sound Transit should be mindful of future extensions to the north and east when planning the configuration of the terminus station.

There was agreement amongst the SAG members to not carry this suggestion forward.

Multi-modal Salmon Bay bridge

Q: What would a multi-modal bridge accommodate? What would it look like?
A: Conceptually, an intermodal bridge would have space for modes other than light rail including bikes, pedestrians, cars, etc.. Such a bridge would need to be designed much differently than a rail-only bridge due to the different requirements for various modes.

C: This option should not be precluded if the funding options have not been fully explored.

There was agreement amongst the SAG members to not carry this suggestion forward, with a minority opinion to carry it forward.

Eliminate or add stations

There was agreement amongst the SAG members to not carry this suggestion forward.

Downtown, South Lake Union and Seattle Center

Ron Endlich, Sound Transit, reviewed the evaluation measures and segment summaries for the Downtown segment. See the PowerPoint presentation for additional details about each alternative/suggestion.

- 5th/Harrison
- 6th/Boren/Roy
- 5th/Mercer
- 5th/Roy/Consolidated SLU Station
- 8th/6th/Republican (First Hill)
- Use Downtown Seattle Transit Tunnel
- Design for potential extensions to north and/or east

Questions and answers, comments and refinements from SAG members during the breakout group discussion included the following:

5th/Harrison

C: The station should serve Uptown residents. They will be the daily users, whereas Key Arena patrons will only use light rail for events.

R: The tunnel portal should be relocated to Kinnear Park, if possible.

There was agreement amongst the SAG members to carry this alternative forward.

6th/Boren/Roy

C: Stations should have entrances on both sides of Roy Street.

C: The stations on Boren and Roy streets are less accessible because they are adjacent to steep grades.

There was agreement amongst the SAG members to carry this alternative forward.

5th/Mercer

Q: How would Sound Transit mitigate the sewer line issue?
A: Solutions would be explored during ongoing analysis.

C: Mercer is a major freight corridor and should be avoided to limit impacts on freight and traffic.

R: Stations should be bored rather than cut-and-cover to minimize impacts to traffic on Mercer Street.

There was consensus amongst the SAG members to not carry this alternative forward.

5th/Roy/Consolidated SLU Station

C: Consolidating stations is not preferred.

There was consensus amongst the SAG members to not carry this alternative forward.

8th/6th/Republican (First Hill)

Q: What are the soil conditions under First Hill?
A: Sound Transit has not yet evaluated the soil conditions in this particular location.

C: Providing access to healthcare facilities is an important consideration, especially for people who frequently use the human service centers in Pioneer Square and Downtown.

C: There is still a significant gap between where the station is located on 8th and the healthcare facilities on First Hill.

C: The constructability challenges with tunneling under I-5 twice are difficult to justify when there are limits on how far east the First Hill station could be located.

C: A First Hill station should not be eliminated because of consistency with ST3 because it was promised in Sound Move. First Hill is a major employment center and residential hub that would benefit from having access to light rail.

C: The station location is not accessible for people with disabilities from Downtown because of the steep grades west of the station.

There was a mix of opinions on this alternative, but SAG members agreed to carry this alternative forward.

Use Downtown Seattle Transit Tunnel

Q: What are the specifics about the station capacity constraints?
A: There is not sufficient long-term capacity in the existing downtown transit tunnel to achieve future service frequency goals.

There was agreement amongst the SAG members to not carry this suggestion forward.

Design for potential extensions to north and/or east

There was agreement amongst the SAG members to not carry this suggestion forward.

General questions and comments

C: Impacts to freight should be carefully considered, especially on Mercer Street.

C: More information about walksheds and population density is needed to make decisions about station locations.

SODO, Stadium and Chinatown-International District

Ron Endlich reviewed the evaluation measures and segment summaries for the SODO segment. See the PowerPoint presentation for additional details about each alternative/suggestion.

- Surface E-3
- Massachusetts Tunnel Portal
- Maintain buses on E-3
- First Ave alignment
- Design for potential extension south to Georgetown

Questions and answers, comments and refinements from SAG members during the breakout group discussion included the following:

Surface E-3

C: A cut-and-cover tunnel in the Chinatown-International District could result in substantial community impacts and should be avoided if possible.

C: Construction impacts on Royal Brougham should be mitigated.

There was agreement amongst the SAG members to carry this alternative forward.

Massachusetts Tunnel Portal

Q: Can additional grade crossings be added to this alternative?
A: Grade crossings could be added as refinements.

Q: How much longer would the Massachusetts Tunnel be?
A: This alternative results in a net increase in tunnel length of 800 linear feet (It replaces 2600 linear feet of cut-and-cover tunnel with 3400 linear feet of bored tunnel length).

R: There should be a Stadium station included in this alternative, or a way to access the stadiums.

R: Add a vehicle overcrossing at S. Lander Street.

R: If possible, the tunnel portal should be located further south to avoid impacts in SODO.

R: If possible, a second Stadium station should be included in this alternative. It would be ideal to have two stations and impact Chinatown-International District as little as possible.

There was agreement amongst the SAG members to carry this alternative forward.

Maintain buses on E-3

C: There must be a plan for bus service during construction and once the E-3 busway is utilized by light rail.

There was agreement amongst the SAG members to not carry this suggestion forward.

1st Ave alignment

C: The current alternatives in SODO are limited. A 1st Ave alignment should be carried forward to provide something to weigh in on.

C: There is lot of potential for growth along 1st Avenue S. over the next 12 years and beyond. An alternative that provides access to those employment centers should be explored.

C: Several SAG members requested additional explanation about a potential 4th Avenue station site in the Chinatown-International District. They noted that the connections to other modes, including Amtrak and the Sounder, limited neighborhood impacts in Chinatown-International District, and future land use plans could make it an attractive option.

There was a mix of opinions regarding a 1st Ave alignment, but SAG members agreed to carry this suggestion forward.

The group also asked for further information regarding the feasibility of a 4th Avenue station location in the Chinatown-International District.

Design for potential extension south to Georgetown

There was consensus amongst the SAG members to not carry this suggestion forward.

General questions and comments

Q: What is a cut-and-cover station?
A: It is a method of construction that allows workers to excavate ("cut") and build an underground station below temporary roadway decking ("cover") while maintaining two-way vehicle and pedestrian traffic above.

C: More alternatives should be explored that provide benefits to SODO.

C: The SODO station area is currently being used as a park-and-ride and does not provide easy access to the employment centers on 1st Avenue S.

West Seattle and Duwamish

Stephen Mak, Sound Transit, reviewed the evaluation measures and segment summaries for the West Seattle/Duwamish segment. See the PowerPoint presentation for additional details about each alternative/suggestion.

- Oregon Street/Alaska Junction
- West Seattle Bridge/Fauntleroy
- Pigeon Ridge/West Seattle Tunnel

- Yancy Street/West Seattle Tunnel
- West Seattle Golf Course/Alaska Junction (Tunnel)
- Tunnel under Duwamish
- West Seattle Bridge
- Gondola, rail/bus bridge
- Extensions to Alki, Admiral, etc.

Questions and answers, comments and refinements from SAG members during the breakout group discussion included the following:

Oregon Street/Alaska Junction

C: Carry forward and include a study of a tunnel alternative.

R: The western portion (from Avalon to the Junction) of this alternative should be in a tunnel to avoid neighborhood impacts in West Seattle and near the Junction.

There was agreement amongst the SAG members to carry this alternative forward.

There was also agreement to carry forward an additional alternative that would refine this alternative to include a tunnel option from Avalon to the terminus.

West Seattle Bridge/Fauntleroy

C: Stations should provide easy access to neighborhood centers, and the Delridge station location would not achieve that.

There was agreement amongst the SAG members to not carry this alternative forward.

Pigeon Ridge/West Seattle Tunnel

C: This tunnel option should be carried forward because there are many unknowns with what costs will arise during the property acquisition phase.

There was agreement amongst the SAG members to carry this alternative forward.

Yancy Street/West Seattle Tunnel

C: The Junction station location does not serve the density in the area. However, the north-south orientation of the tunnel Alaska Junction Station is preferred.

There was agreement amongst the SAG members to not carry this alternative forward.

West Seattle Golf Course/Alaska Junction

Q: Could the alignment be moved to the north side of the golf course to reduce the 4(f) impacts?
A: This would be similar to the alignment of the suggested refinement of the Oregon Street/Alaska Junction alternative.

C: The consolidation of stations is not preferred.

C: The Delridge station location is preferred, because it is further south.

R: The West Seattle station location should be closer to the Junction.

R: The Avalon station should be located near key bus transfer points.

There was agreement amongst the SAG members to not carry this alternative forward.

Tunnel under Duwamish

There was agreement amongst the SAG members to not carry this suggestion forward.

West Seattle Bridge

There was agreement amongst the SAG members to not carry this suggestion forward.

Gondola, rail/bus bridge

There was agreement amongst the SAG members to not carry this suggestion forward.

Extensions to Alki, Admiral, etc.

C: Future extensions should not be precluded.

There was agreement amongst the SAG members to not carry this suggestion forward.

General questions and comments

C: Impacts to Harbor Island should be minimized.

Agenda Item #5 – Review group's recommendations

Diane Adams reviewed the completed recommendation worksheets for each segment which noted whether each alternative was recommended to be carried forward, as well as comments and notes from SAG members.

Interbay and Ballard

	Alternative	Carry forward?	Comments
Alternatives with more potential	Elliott/15th/16th/Fixed Bridge	Yes	
	West of BNSF/20th/17th/ Fixed Bridge	Yes	
	East of BNSF/14th/Movable Bridge	Yes	
	West of BNSF/20th/17th/ Tunnel	Yes	
	Elliott/Armory Way/14th/Tunnel	Yes	
Alternatives with greater potential	West of BNSF/20th/Tunnel	Yes	• Mixed opinions, but agreement to carry forward
Not practical suggestions	Tunnel through Queen Anne/Interbay	No	
	Extensions to 65th, 85th, Northgate	No	
	Multi-modal Salmon Bay bridge	No	• Minority opinion to carry forward
	Eliminate or add stations	No	

Downtown, South Lake Union and Seattle Center

	Alternative	Carry forward	Comments
Alternatives with more potential	5th/Harrison	Yes	
	6th/Boren/Roy	Yes	• Move Seattle Center station south
Alternatives with greater potential	5th/Mercer	No	• Freight impacts on Mercer; some prefer Seattle Center station location
	5th/Roy/Consolidated SLU Station	No	
	8th/6th/Republican	Yes	• Mix of opinions on carrying forward
Not practical suggestions	Use Downtown Seattle Transit Tunnel	No	
	Design for potential extensions to north and/or east	No	

SODO, Stadium and Chinatown-International District

	Alternative	Carry forward	Comments
Alternatives with more potential	Surface E-3	Yes	
	Massachusetts Tunnel Portal	Yes	• Consider hybrid with full grade separation
Not practical suggestions	Maintain buses on E-3	No	• Need to study impacts to buses during construction and long term
	First Ave alignment	Yes	• Explore modifications that meet operational requirements, including potential additional station to serve First Avenue
	Design for potential extension south to Georgetown	No	
New suggestion	Alternative station location	Yes	• Consider 4th Ave Station in Chinatown/ID

West Seattle and Duwamish

	Alternative	Carry forward	Comments
Alternatives with more potential	Oregon Street / Alaska Junction	Yes	• Explore elevated and tunnel options
	West Seattle Bridge / Fauntleroy	No	
	Pigeon Ridge / West Seattle Tunnel	Yes	
Alternatives with greater challenges	Yancy Street / West Seattle Tunnel	No	
	West Seattle Golf Course / Alaska Junction	No	• Add Avalon station, modify to reduce 4(f) impacts
Not practical suggestions	Tunnel under Duwamish	No	
	West Seattle Bridge	No	
	Gondola, rail/bus bridge	No	
	Extensions to Alki, Admiral, etc.	No	

Agenda Item #6 – Next steps and next meeting

Diane Adams thanked the SAG members for attending the meeting. Cathal Ridge explained the next steps with the SAG's recommendations: the completed recommendation worksheets, notes and refinements will be summarized and passed along to the ELG for their reference when making a recommendation to the Sound Transit Board.

One SAG member asked if there would be a recommendation from Sound Transit staff in addition to the SAG recommendation. Cathal explained that Sound Transit staff would only be passing along the SAG's recommendations. The next SAG meeting is scheduled for May 30 at Union Station.

West Seattle and Ballard Link Extensions
Stakeholder Advisory Group Meeting #7 – July 16, 2018
Meeting Notes

Agenda Item #1 – Welcome and introductions

Diane Adams, Facilitator, welcomed Stakeholder Advisory Group (SAG) members to the group's seventh meeting. She confirmed the agenda and stated the meeting's objective: reaching a recommendation on which additional alternatives for the SODO and Chinatown-International District area should be carried forward into Level 2 screening.

Agency directors, project leads and staff in attendance were:

- Cathal Ridge, Central Corridor Director, Sound Transit
- Diane Adams, Facilitator
- Jim Parsons, Consultant Project Manager, HNTB
- Ron Endlich, Project Director, Sound Transit
- Stephen Mak, High Capacity Transit Development Manager, Sound Transit
- Leda Chahim, Government & Community Relations Manager, Sound Transit
- Andrea Burnett, Community Outreach Supervisor, Sound Transit
- Rebecca McAndrew, Senior Environmental Planner, Sound Transit
- Sandra Fann, High Capacity Transit Development Manager, Sound Transit
- Wesley King, Central Corridor Operations Director, Sound Transit
- David Shelton, Central Segment Lead, HNTB
- Jeanne Krikawa, Station Area Planning Lead, The Underhill Group
- KaDeena Yerkan, External Engagement Lead, EnviroIssues
- Jenifer Chao, Department of Neighborhoods, City of Seattle

SAG members in attendance were:

- Andres Arjona, Community Representative – Ballard
- Becky Asencio, Seattle Public Schools
- Brian King, Community Representative – West Seattle
- Bryce Yadon, Futurewise
- Deb Barker, Community Representative – West Seattle
- Erin Goodman, SODO Business Improvement Area
- Ginny Gilder, Force 10 Hoops/Seattle Storm
- Greg Nickels, Former Mayor of Seattle
- Hamilton Gardiner, West Seattle Chamber
- Larry Yok, Community Representative – Chinatown-International District
- Maiko Winkler-Chin, Seattle Chinatown-International District Preservation & Development Authority
- Peter Schrappen, Northwest Marine Trade Association
- Robert Cardona, Community Representative – Uptown
- Ron Sevart, Space Needle
- Scott Rusch, Fred Hutchinson Cancer Research Center

- Steve Lewis, Alliance of People with disAbilities
- Walter Reese, Nucor Steel
- Warren Aakervik, Community Representative – Freight
- Willard Brown, Delridge Neighborhood Development Association

NOTE – the following SAG members were not in attendance:

- Abigail Doerr, Transportation Choices Coalition *(no longer able to participate as a SAG member)*
- Colleen Echohawk, Chief Seattle Club
- Dave Gering, Manufacturing Industrial Council
- Jon Scholes, Downtown Seattle Association
- Julia Park, Community Representative – Ballard
- Katie Garrow, Martin Luther King Labor Council
- Mark Nagle, Expedia
- Mike Stewart, Ballard Alliance
- Paul Lambros, Plymouth Housing *(no longer able to participate as a SAG member)*
- Savitha Reddy Pathi, Wing Luke Museum of the Asian Pacific American Experience

Agenda Item #2 – Previous meeting summary

Diane reviewed the following topics discussed at the June 20 SAG meeting:

- Community engagement and collaboration
- Level 2 alternatives
- Level 2 screening criteria
- Additional concepts in Chinatown-International District and SODO
- Station planning

Cathal Ridge, Sound Transit, updated the group on the alternatives development process, revisited the Level 1 screening results and listed the alternatives being analyzed during Level 2.

Agenda Item #3 – Community engagement update

Andrea Burnett, Sound Transit, provided an update on ongoing and upcoming community engagement activities. She presented the monthly report for June 2018, noting that Sound Transit held 15 community briefings, three social service provider interviews and engaged more than 2,700 people at recent fairs and festivals. Finally, Andrea invited SAG members to attend the next round of neighborhood forums, scheduled for September.

Agenda Item #4 – SODO evaluation results and recommendation discussion

Ron Endlich, Sound Transit, reviewed the process and timeline to identify, review and evaluate the additional alternatives for SODO. Community feedback on the SODO alternatives during Level 1 screening centered around providing access to key destinations in the area. Ron explained the following community concerns and operational needs that informed the additional alignments and station alternatives in SODO:

- Community concerns:
    - Providing service to destinations within SODO
    - Facilitating transfers at the SODO station
    - Determining how the E-3 Busway can be utilized
    - Maintaining freight mobility within and through SODO
    - Providing safe access to the station
- Operational needs:
    - Providing a connection to the maintenance facility
    - Connecting the new line to the existing transit tunnel
    - Establishing an interim terminus
    - Managing track connections

Building on the concepts presented at the June 20 SAG meeting, Sound Transit has developed and analyzed (using Level 1 criteria) the below alternatives. See the PowerPoint presentation for additional details about each alternative.

- Occidental Avenue S
- 6th Avenue S
- Track interlining
- Extended Ballard line

SAG members discussed the new SODO alternatives and worked towards recommendations in small groups. Questions (Q) and comments (C) from SAG members, as well as answers (A) provided by Sound Transit staff, for each alternative during the breakout group discussions included the following:

Occidental Avenue S

Q: Would Occidental Avenue S be closed to traffic if it is used by light rail?
A: During construction, Occidental Avenue S would likely be closed completely. Following construction, access would likely be more restricted than it is today.

Q: Could there be any crossover between tracks with this alternative?
A: There would not be any crossover between the two lines with this alternative.

C: Starbucks is not the only employer in the area. There are over 45,000 people who work in the SODO area who would also benefit from a light rail station closer to employment centers along 1st Avenue S.

C: Given potential redevelopment in the area, there should be plans to improve access and safety for people walking to, from and around the station area.

C: Since people will be able to transfer at the nearby stations north of SODO, maintaining the option to transfer should not outweigh improving access for people working in SODO.

Q: When you talk about development on Occidental or 1st Avenue S, are you talking about a change in zoning?
A: We are assuming the same zoning as today.

Q: Occidental may provide access to another part of SODO, but I don't understand the benefits of the 6th Avenue S alternative.
A: The 6th Avenue S alternative avoids using a portion of the E-3 Busway. However, it would likely still displace the E-3 Busway north of S Massachusetts Street.

C: Going down Occidental is like going down 1st Avenue. It's problematic for freight. Putting a station at S Lander Street puts a lot of pressure on development in that area.

C: The Occidental alternative must go over the BNSF rail yard, which is challenging. Seems like a non-starter.

C: Having more options through SODO is a good thing. I don't drive a truck, so I don't think about that aspect.

C: Starbucks is located along 1st Avenue S and has a lot of employees. There could be more employment in the future.

There was agreement amongst the SAG members to carry this alternative forward.

6th Avenue S

Q: What is the road configuration of 6th Avenue S for this alternative?
A: The street would likely be reconfigured to allow for elevated light rail to operate in the middle of the roadway, although this is not yet a firm plan. The guideway columns would likely impact some of the street right of way.

Q: Does the 6th Avenue S alternative still impact the E-3 Busway north of S Massachusetts Street?
A: Yes.

C: It all depends on what happens with E-3 buses and the demand.

C: You could keep the option, but it looks like a lot of disruption to businesses and a lot of property takes.

C: Seems to have a lot of downsides and not a lot of upsides. Seems needlessly complicated.

There was agreement amongst the SAG members to not carry this alternative forward.

Track interlining

C: Having a potential bottleneck in this area is not preferred.

There was agreement amongst the SAG members to not carry this concept forward.

Extended Ballard line

There was agreement amongst the SAG members to not carry this concept forward.

Agenda Item #4 – Chinatown-International District evaluation results and recommendation discussion

Ron Endlich, Sound Transit, reviewed the process and timeline to identify, review and evaluate additional alternatives in Chinatown-International District. Feedback for the Chinatown-International District during Level 1 screening was focused on improving connections, activating Union Station and avoiding construction impacts in Chinatown-International District. Ron reviewed the various construction methods and their respective impacts, including cut-and-cover stations, open-cut stations and mined stations. He highlighted the technical challenges being considered and provided examples of stations in the Seattle area utilizing the above construction methods for context. Ron recapped the following community concerns and construction constraints, as presented during the June 20 SAG meeting:

- Community concerns:
  - Avoiding construction impacts
  - Improving intermodal connections
  - Activating Union Station
- Construction constraints:
  - Limited right of way
  - Poor soil conditions
  - Deep piles under 4th Avenue S, Union Station and the International District/Chinatown Station
  - Conflicts with the existing transit tunnel structures

Building on the concepts presented at the June 20 SAG meeting, Sound Transit has developed and analyzed (using Level 1 criteria) the below alternatives. See the PowerPoint presentation for additional details about each alternative.

- 5th Avenue bored tunnel / mined station
- 4th Avenue cut-and-cover tunnel and station
- 4th Avenue bored tunnel / mined station
- Union station bored tunnel / mined station

SAG members discussed the new Chinatown-International District alternatives and worked towards recommendations in small groups. Questions (Q) and comments (C) from SAG members, as well as answers (A) provided by Sound Transit staff, for each alternative during the breakout group discussions included the following:

5th Avenue bored tunnel / mined station

Q: How deep would a mined station likely be?
A: It would likely be approximately 120 feet underground.

C: Given the requirement for an above-ground portal to access the mined station during construction, there would still be community impacts. This option would be more advantageous if there were no community impacts during construction.

There was agreement amongst the SAG members to carry this alternative forward.

4th Avenue cut-and-cover tunnel and station

C: The city of Seattle's plan for the 4th Avenue viaduct replacement should inform which option is preferred. If the viaduct was replaced after major construction on 5th Avenue, the impacts to the Chinatown-International District would be extremely difficult to overcome.

C: As a potential transit user, this station location and depth are appealing.

C: Having an option that does not impact 5th Avenue would be good to carry forward to compare impacts to Chinatown-International District.

Q: What would the traffic impacts likely be if 4th Avenue was closed during construction?
A: The specific construction details are not yet known. It may be possible to replace the 4th Avenue viaduct one half at a time. In total, construction is anticipated to last five to six years.

C: The additional depth necessary for a 4th Avenue station location may make it more difficult to construct the connection to the new downtown transit tunnel.

Q: Could the temporary roadway above a cut-and-cover tunnel be modified to be permanent?
A: It would be possible, but due to work that would need to happen just underneath the roadway, it would be much more expensive because of additional excavation needs.

There was agreement amongst the SAG members to carry this alternative forward.

4th Avenue bored tunnel / mined station

Q: What would likely happen to the 33,000 cars using 4th Avenue daily?
A: As with any major closure, there would be a traffic and detour plan to spread the traffic out through parallel roadways.

There was agreement amongst the SAG members to carry this alternative forward.

Union station bored tunnel / mined station

C: The 4th Avenue station locations have more benefits and seem more feasible.

C: While it would be great to use Union Station as a hub, it does not seem feasible to have a station in this area.

There was agreement amongst the SAG members to not carry this alternative forward.

Agenda Item #5 – Technical briefings

Equity and Inclusion

Leda Chahim, Sound Transit, introduced Jenifer Chao, Seattle Department of Neighborhoods. Leda provided an overview of how Sound Transit, in partnership with the city of Seattle, is incorporating principles of equity and inclusion into the planning process and evaluating the alternatives to identify components that would provide benefits or would disproportionately affect low-income and minority populations.

Jenifer Chao presented on the goals and processes of the city's Race and Social Justice Initiative (RSJI). As part of the RSJI, the city uses the Racial Equity Toolkit (RET) to assess how projects impact racial equity. Jenifer walked through the following steps involved in the toolkit:

1. Set outcomes.
2. Involve stakeholders and analyze data.
3. Determine benefit and/or burden.
4. Advance opportunity or minimize harm.
5. Evaluate. Raise racial awareness. Be accountable.
6. Report back.

Sound Transit and the city are applying the RET process to the project and have established shared project outcomes. To date, an equity lens has informed modifications to the screening criteria as well as community engagement efforts, including the development of the Community Engagement Guide, engagement in Chinatown-International District, social service provider interviews, and the addition of a Delridge station area planning charrette. Collaboration on these and other efforts support the following shared project outcomes:

- Enhancing mobility and access to create opportunity for communities of color and low-income populations.
- Creating opportunities for equitable development that benefit communities of color.
- Avoiding disproportionate adverse impacts on communities of color and for low-income populations.
- Meaningfully involving communities of color and low-income populations.

Leda reviewed the Level 1 findings related to historically underrepresented populations within the project area. Key points included the following:

- Communities of color tend to have lower incomes and access to opportunity than majority white communities.
- Chinatown-International District is the only station area along the alignments that is densely populated by communities of color in the project corridor.
- In Delridge, densely populated communities of color lie within the bike and transit sheds of the Delridge and Avalon station areas, but not within those stations' immediate walksheds.

During Level 2 screening, Sound Transit will continue to build on the collaborative work done during Level 1 to continue to elevate issues and considerations to better inform the alternatives development process, provide information that data cannot provide and develop a memo detailing Level 2 evaluation and community feedback.

Water crossings

Diane Adams introduced Stephen Mak, Sound Transit, to present on the various water crossings and key design considerations that go into the planning process for these crossings.

For the Duwamish crossing, Stephen highlighted the following design considerations:

- Terminal operations and freight movement
- Railroad operations
- Waterway navigation channel
- Waterway user needs
- Tribal fishing within the Duwamish River basin
- Fish and wildlife habitats
- Cultural resources
- Objects affecting navigable airspace

For the Salmon Bay crossing, Stephen highlighted the following design considerations:

- Railroad operations
- Existing and future marine business and commerce
- Existing and future transportation projects
- Tribal fishing in Salmon Bay and access to Puget Sound
- Fish and wildlife habitats
- Cultural resources
- Federal navigation channel
- Waterway user needs

Stephen introduced Rebecca McAndrew, Sound Transit, to describe the above considerations in more detail and explain how related permits may impact the project. Rebecca listed the considerations and permit requirements related to the following entities:

- Tribes
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- National Oceanic and Atmospheric Administration
- U.S. Fish and Wildlife Services
- Washington State Department of Ecology
- Washington Department of Fish and Wildlife
- City of Seattle

Following Rebecca's presentation, Stephen closed by providing a high-level overview of the following types of water crossings:

- High-level fixed bridge
- Moveable bridge
- Tunnel

Agenda Item #6 – SODO and Chinatown-International District results and recommendation discussion

Diane Adams reviewed the completed recommendation worksheets for the SODO and Chinatown-International District areas. The slides included whether each alternative was recommended to be carried forward, as well as comments from SAG members.

SODO

Alternative	Carry forward?
ST3 Representative Project	Yes
Surface E-3	Yes
Massachusetts Tunnel Portal	Yes
Occidental Avenue	Yes
6th Avenue	No
"Track interlining"	No
"Extended Ballard line"	No

Comments captured from the SAG members' group discussion included:

- Concern that station located on Occidental could put pressure on industrial areas and freight mobility.
- Felt need to continue to have an alternative to the west of existing line.
- Station planning focus on improving bus and other access in SODO.

Chinatown-International District

Alternative	Carry forward
5th Avenue cut-and-cover tunnel and station (ST3 representative project)	Yes
5th Avenue bored tunnel / cut-and-cover station	Yes
5th Avenue bored tunnel / mined station	Yes
4th Avenue cut-and-cover tunnel and station	Yes
4th Avenue bored tunnel / mined station	Yes
Union Station bored tunnel / mined station	No

Comments captured from the SAG members' group discussion included:

- Desire to carry forward multiple alternatives until more is known about construction impacts and duration.
- Lack of full consensus but majority support to carry forward both 5th Ave Bored Tunnel/Mined Station and 4th Ave Bored Tunnel/Mined Station alternatives.
- Need for clarity from City of Seattle regarding 4th Avenue viaduct replacement need and funding availability.

Agenda Item #7 – Next steps and next meeting

Diane Adams thanked the SAG members for attending the meeting. Cathal Ridge explained the next steps with the SAG's recommendations: the completed recommendation worksheets will be passed along to the ELG for their reference when making a recommendation.

One SAG member asked about the upcoming station area planning charrettes. Cathal explained the topics and goals of the charrettes. He noted that the groups, comprised of agency staff and community representatives, would be discussing and providing input on how the stations function in the respective station areas. Leda offered to set up briefings with SAG members, or the groups they represent, to present the information being discussed in the charrettes, should that be of interest.

Diane Adams thanked SAG members for attending the group's seventh meeting. The next SAG meeting is scheduled for September 5th at Union Station.

APPENDIX F

Elected Leadership Group
Meeting Summaries (5/17/18 and 7/19/18)

West Seattle and Ballard Link Extensions
Elected Leadership Group Meeting #2 – May 17, 2018
Meeting Notes

Agenda Item #1 – Welcome and introductions

King County Councilmember and Sound Transit Board Member Joe McDermott welcomed the Elected Leadership Group (ELG) members to the group's second meeting. He noted that the number of Seattle City Councilmembers in the group will make the ELG meeting double as an official city of Seattle Sustainability and Transportation Committee meeting. He highlighted that extensive work on alternatives development has been completed since the last ELG meeting, including a series of open houses, neighborhood forums and four Stakeholder Advisory Group (SAG) meetings. McDermott thanked individuals, businesses, community organizations, the SAG and partner agencies for their time, effort and work performed during the Level 1 alternatives development phase. He noted the purpose of the second ELG meeting is to discuss which alternatives should be recommended to the Sound Transit Board for Level 2 alternatives development.

Peter Rogoff, Sound Transit CEO, welcomed ELG members and thanked the public for attending. He noted that Mayor Jenny Durkan could not attend the meeting. He emphasized gratitude for progress made on the project and for the partnerships that have developed with the public and stakeholders to present a series of recommendations to the Sound Transit Board. He noted that in less than one year, the Sound Transit Board will make a decision on a preferred project. He stressed the importance of delivering a project that meets the future community's needs and vision and that the West Seattle and Ballard Link Extensions are a fundamental part of the 116-mile Link light rail network. Rogoff noted that the results of today's ELG meeting will be shared with the Sound Transit Board at a briefing on May 21, 2018.

Seattle City Councilmember Lorena González announced that she has a conflict of interest with several alternatives under consideration for the West Seattle Link Extension, as she owns property in the neighborhood. She noted that she will excuse herself during public comment and when the ELG discusses the West Seattle/Duwamish segment.

Agency directors, project leads and staff in attendance were:

- Peter Rogoff, Sound Transit CEO
- Cathal Ridge, Sound Transit
- Leda Chahim, Sound Transit
- Desmond Brown, Sound Transit
- Diane Adams, Facilitator

ELG members in attendance were:

- Executive Dave Somers, Sound Transit Board Chair
- Executive Dow Constantine, Sound Transit Board Member
- Councilmember Rob Johnson, Sound Transit Board Member
- Councilmember Joe McDermott, Sound Transit Board Member

- Councilmember Lisa Herbold, Seattle City Council
- Councilmember Bruce Harrell, Seattle City Council
- Councilmember Sally Bagshaw, Seattle City Council
- Councilmember Mike O'Brien, Seattle City Council (by phone)
- Councilmember Lorena González, Seattle City Council
- Commissioner Stephanie Bowman, Port of Seattle

NOTE – the following member was not in attendance:

- Mayor Jenny Durkan, Sound Transit Board Member

Agenda Item #2 – Public comment

Councilmember Rob Johnson, Sound Transit Board Member, led the public comment period, nothing that commenters would be allowed one minute to speak, and Seattle Channel would be recording and posting the meeting online to ensure visibility and documentation of the meeting.

Members of the public provided the following comments:

- One attendee voiced support for an alternative that would serve the First Hill neighborhood. First Hill is a heavily transit-dependent neighborhood and noted that transit is necessary to meet the needs of hospital staff and First Hill neighbors. Public transit in the First Hill neighborhood would reduce the number of vehicles on the streets, making it possible for first responders to access nearby hospitals.
- One attendee, on behalf of Stand Up America, noted their concerns with collusion between large companies and the government. They voiced frustration with having one minute to address the ELG, stating that the ELG is not interested in listening to the public.
- One attendee voiced support for a station in the First Hill neighborhood to help serve senior populations who have mobility challenges. They noted that living without a car in the city has its challenges and would like to see a transit system that would make it easier for employees to get to their jobs on First Hill.
- One attendee, on behalf of the First Hill Improvement Association, expressed support for a First Hill station and requested that public engagement with the First Hill community continue. They noted First Hill's community partnerships with other agencies who are bringing transit projects to the neighborhood.
- One attendee, on behalf of the Ballard Alliance, expressed support for any alternative that includes a tunnel for the Ballard Link Extension. They made two requests of the ELG: 1) Provide visual representations of the alternatives considered in Level 2 to inform the discussion about place-making and urban design, and 2) Provide a cost comparison of the different alternatives and the associated economic impacts. Lastly, they stated that Fishermen's Terminal is critical to the Ballard community and to factor it into the decision-making process for which alternatives get advanced to Level 2.
- One attendee said they are excited about light rail coming to West Seattle. They shared that having three stations in the West Seattle Link Extension is a priority, as well as avoiding negative

impacts to green space. They asked the ELG not to advance the West Seattle Golf Course/Alaska Junction (Tunnel) alternative because it would negatively impact Delridge Park.

- One attendee asked that the ELG consider a First Hill station, as it is one of the densest neighborhoods and home to three of Seattle's largest hospitals. They emphasized that neighborhoods that are zoned for affordable housing must have adequate transit and frequent service.
- One attendee, on behalf of the First Hill Improvement Association, stated that First Hill is a regional employment center, is a highly transit-dependent neighborhood that has higher than average poverty levels, when compared to other neighborhoods in Seattle. They stated that all breakout groups at the Downtown Neighborhood Forum supported a First Hill station over a Midtown station.
- One attendee, on behalf of the First Hill Improvement Association, noted that First Hill is projected to experience a 71 percent population growth in the next five years. There are tens of thousands of jobs that provide economic opportunities, many of which rely on high-capacity transit to get to. They noted that the SAG and attendees of the Downtown Neighborhood Forum suggested a First Hill station to move to Level 2 alternatives development and asked the ELG to recommend a First Hill station to the Sound Transit Board.
- One attendee, a long-time resident of First Hill, noted appreciation for the First Hill neighborhood and how welcoming it's been to density, to people who need affordable housing and those who need access to transit. They noted there are few places left to park a personal vehicle in First Hill.
- One attendee supported a First Hill station, noting that they moved to First Hill for more transit opportunities. With three hospitals, two high schools and a college nearby, First Hill needs accessible transit for people who don't drive.
- One attendee, on behalf of Virginia Mason, shared support for a First Hill station, stressing the importance of commuters to access services that are critically important to the growth and health of the region.
- One attendee, on behalf of the Alliance for Pioneer Square, the Chinatown-International District Business Improvement Association, and the Pioneer Square Business Improvement Area, asked Sound Transit to consider an alternative on Fourth Avenue that would use Union Station. They added that the proposed alternatives along Fifth Avenue may negatively impact workers, residents and the public.
- One attendee commented on the large number of senior facilities and hospitals on First Hill. They noted that service workers rely on public transit to access their jobs and encouraged a station to be located on First Hill.

Agenda Item #3 – Community Engagement and Collaboration

Diane Adams, facilitator, reiterated that the goal of the meeting is for the Elected Leadership Group to provide a consensus-based decision to the Sound Transit Board on which alternatives should advance to Level 2. Diane noted that David Shelton of HNTB will summarize the alternatives discussion and a short summary will be presented before the meeting concludes.

Cathal Ridge, Sound Transit, provided background on the West Seattle and Ballard Link Light Rail Extensions project. He described the representative project as identifying mode, corridor and station areas, as well as informing cost, schedule and operating needs. Cathal discussed the project timeline for

West Seattle and Ballard Link Extensions, noting that service on the Ballard Link Extension will start five years after the West Seattle Link Extension is operational, due to the construction of a new Downtown Transit Tunnel.

Cathal highlighted the volume of public input that Sound Transit received during Level 1 alternatives development, which began in early 2018. Sound Transit conducted early scoping in February 2018, which included a comment period, three public meetings, one agency meeting and an online open house. Over 2,800 comments were received during early scoping, which are captured in the Early Scoping Summary Report. Other public involvement opportunities that have occurred include the first series of Neighborhood Forums and four Stakeholder Advisory Group meetings.

Cathal gave a brief overview of how each segment would be presented:

1. Feedback received during early scoping
2. A map of segment alternatives and evaluation measures
3. Feedback received at Neighborhood Forums
4. A full segment summary
5. Recommendations made by the Stakeholder Advisory Group

Questions from ELG members included the following:

Q: Will the ELG have the opportunity to discuss and build consensus around each segment after it's presented?
A: *Correct, there will be an opportunity after each segment is presented to discuss the alternatives and share which alternatives the ELG would like to advance to Level 2.*

Agenda Item #4: West Seattle/Duwamish Alternatives, Evaluation Results, Feedback and Recommendations

Cathal Ridge reviewed feedback received during early scoping on the West Seattle alternatives, highlighting input to consider a tunnel option, accommodate future extensions to the south, minimize neighborhood disruption and preserve industrial operations. Feedback received at the Neighborhood Forums included some mixed opinions on the Junction station location, consolidating stations and usage of open space, primarily the West Seattle Golf Course. Cathal stated that there was support for the Pigeon Ridge/West Seattle Tunnel alternative, a tunnel in the Junction area and support for a north-south station orientation.

Discussion

The following comments were provided by ELG members:

- Priorities for West Seattle alignment:
  - Orient stations in a north-south direction to build future extensions southward.
  - Build three stations.
  - Preserve Longfellow Creek.
  - Design bus transfers to be seamless.
- Support for moving Delridge station location south of Southwest Andover Street to create a larger walkshed to serve the Delridge community.

- Support for an alternative that will place the West Seattle alignment south of South Spokane Street.
- Support for providing convenient access to light rail that serve neighborhoods like White Center, Arbor Heights and High Point.
- Support for elevated or tunnel options in the Oregon Street/Alaska Junction alternative.
- Support for three stations to serve walksheds, transit-oriented development and provide strong bus and rail integration.
- Consider combining the ST3 representative project or the West Seattle Golf Course/Alaska Junction alternative with the Oregon Street/Alaska Junction alternative.
- Consider mixing and matching numerous alternatives for the recommended project.
- Consider regional context and ST3 plan consistency.
- Concerns about impacts to industrial areas along Harbor Island, including Terminal 5 and Terminal 18.
- Concerns about an elevated structure through the Junction and neighborhood impacts.
- Concerns about budget and risk of bearing expenditures made up front, in the event the economy downturns or project funding does not come through as expected.
- Concerns about cost of tunnel for the Pigeon Ridge/West Seattle Tunnel alternative.
- Request for future evaluation related to walksheds/ridership, multimodal and transit integration, cost, anticipated impacts to neighborhoods and visual representatives of alternatives.
- Request for more information about Longfellow Creek.
- Request to reduce the 4(f) impacts related to the West Seattle Golf Course/Alaska Junction alternative.
- Request for the Junction station location to be close to California Avenue Southwest.
- Reduce the need for property acquisition.
- Thankful for Sound Transit's community engagement thus far; receiving accolades and satisfaction from the West Seattle community.
- Invitation for ELG members to tour Harbor Island and Fishermen's Terminal to discuss potential impacts the West Seattle and Ballard Link Extensions may have.

The ELG members were in general agreement with the recommendations put forth by the SAG, with the exception to carry forward the West Seattle Golf Course/Alaska Junction alternative. They recommended exploring a refined version that avoids 4(f) impacts, as well as exploring a crossing on the south side of the West Seattle Bridge in the Oregon Street/Alaska Junction alternative.

Agenda Item #5 – SODO, Stadium, Chinatown/International District Alternatives, Evaluation Results, Feedback and Recommendations

Cathal Ridge reviewed feedback received during early scoping on the SODO and Chinatown/International District alternatives, highlighting interest in the Stadium station location serving both extensions, minimizing cut-and-cover construction impacts along Fifth Avenue South and concerns about E-3 busway utilization.

Cathal noted that Sound Transit has been working with city partners to create and apply a Racial Equity Toolkit to improve community engagement in this area of the project.

Feedback received at the Neighborhood Forums included support for grade-separated roadways, concerns about displacing bike lanes and bus lanes, and mixed opinions on closing South Royal Brougham Way. Cathal addressed a new suggestion to consider a Fourth Avenue South Station in Chinatown/ID that was not originally developed by Sound Transit nor included as part of the early scoping feedback. Peter Rogoff, Sound Transit CEO, noted that the Fourth Avenue South Station alternative has not received as much analysis as the other alternatives have. He highlighted there may be geometric challenges to the alignment, but Sound Transit is committed to reviewing options to overcome these challenges and present a viable alternative for further consideration.

Peter Rogoff addressed ELG members noting that Sound Transit plans to host a meeting with business leaders in Chinatown/ID that wrote a letter to the agency. The meeting will serve as an opportunity to engage with community leaders and create an open dialogue that Sound Transit hopes to continue throughout the alternatives development process.

Discussion

The following comments were provided by ELG members:

- Support for the Fourth Avenue South station in Chinatown/ID.
- Support for evaluation of alignments further west of the ST3 representative project on First Avenue South.
- Support for further study on which alternative will allow for a better transfer environment, as the SODO station will serve as an interim terminus for five years before the Ballard Link Extension is operational.
- Support for providing Chinatown/ID community members with better connections to transit.
- Support for an alignment that serves employees along First Avenue South. If First Avenue South is not a viable option, request to further study walksheds, bike paths and other transit connections to First Avenue South.
- Concerns about closing E-3 busway.
- Concerns about transfer points at SODO station for riders headed to West Seattle during the five-year interim before Ballard Link Extension becomes operational.
- Concerns about impacts to freight mobility and operations on First Avenue South.
- Request to reduce impacts in the Chinatown/ID neighborhood to the highest extent possible.
- Request to work closely with King County Metro to ensure bus service and frequency on E-3 is sustained.

ELG members agreed with the recommendations put forth by the SAG, with a request to explore alignments further west of the ST3 representative project and to evaluate potential freight impacts for a First Avenue South alternative.

Agenda Item #6 – Downtown, South Lake Union, Seattle Center Alternatives, Evaluation Results, Feedback and Recommendations

Cathal Ridge presented feedback received during early scoping and at the Neighborhood Forums for the Downtown, South Lake Union and Seattle Center alternatives. He highlighted input such as ensuring good connections at transfer points, support for connections to Seattle Center, mixed opinions on

consolidating or spreading the Denny and South Lake Union stations farther apart and support for a First Hill station. Cathal noted there are major constructability concerns in building the First Hill Station.

Discussion

The following questions were asked by ELG members:

Q: Is the First Hill alternative inconsistent with the ST3 Plan presented to voters? Are there legal restrictions to consider when evaluating this alternative?
A: *Sound Transit's General Counsel, Desmond Brown, was asked to address the ELG members to discuss legalities surrounding the First Hill alternative. Desmond explained that a plan was required to be submitted to voters, and the plan identified specific stations, so that the public could make informed decisions before voting. After approval, Sound Transit is required to build the stations outlined in the ST3 Plan that voters approved. The Plan can be modified if the proposed station cannot be built as planned due to infrastructure or cost changes. The Plan provides limited opportunities to change after it is approved by voters.*

Q: Would the First Hill alternative require high-speed elevators to access the underground station and does that add a significant cost?
A: *Correct. By estimate, the tunnel for the First Hill station would be about 160 feet deep, compared to the University of Washington station at a depth of 105 feet. A deeper station is expected to cost more money.*

Q: Can Sound Transit explain why the First Hill alternative is recommended for further evaluation, but the agency has voiced concerns about constructability?
A: *The First Hill station was not included in the ST3 Plan. The recommendation to advance the First Hill alternative to Level 2 was provided by the SAG based on public input received. The ELG can recommend advancing the alternative to the Sound Transit Board if they choose to.*

Q: During alternatives development for the ST2 Plan, the Sound Transit Board was informed that a station on First Hill was unfeasible from an engineering perspective. This led to funding for the First Hill Streetcar to be included in the ST2 Plan. Is it fair to say that the engineering assessments conducted years ago are sufficient for Sound Transit to state that there are similar concerns about feasibility from an engineering perspective for a First Hill station?
A: *The previous engineering assessment is helpful information, but Sound Transit has not conducted specific geotechnical and soil analysis for a First Hill station in this location.*

The following comments were provided by ELG members:

- Support for further discussion of First Hill alternative with more information about cost, potential ridership and engineering feasibility.
- Support for creating seamless transfers at Westlake station.
- Support for the Denny and South Lake Union stations to be further apart to increase walksheds.
- Consider how Madison BRT will operate, frequency of service and how it can connect to the Midtown station.
- Consider the residents and major employers on First Hill who would greatly benefit from a First Hill station.

- Consider if moving the First Hill station a couple blocks from the proposed location could benefit one community over another, while remaining inside the bounds of the general station location outlined in ST3.
- Consider the city of Seattle's large investment of properties on Mercer Street and consider potential collaborations between Sound Transit and the city.
- Concerns about engineering stability with crossing Interstate 5 twice for a First Hill station.
- Concerns about additional cost spent further evaluating the First Hill alternative when it has been categorized as unfeasible from a technical perspective.
- Concerns about a First Hill station and inconsistencies with the ST3 Plan.
- Concerns that a station on Sixth Avenue would not benefit as many potential riders as a station on Eighth Avenue.
- Concerns about access to the University of Washington facilities on Republican Street and Eighth Avenue.
- Noted that there is a significant transit investment already made in First Hill with the Seattle Streetcar.

ELG members provided mixed opinions on whether the First Hill alternative should advance. Diane Adams, facilitator, asked if ELG members would agree to advance the First Hill alternative, with additional evaluations performed, knowing that the alternative might not advance past a Level 2 recommendation to the Sound Transit Board. Peter Rogoff noted that any further analysis of the First Hill alternative will require additional staff time and resources. He encouraged ELG members to be rigorous in selecting which alternatives move forward.

There was further discussion about advancing the First Hill alternative and requests to advance the alternative slightly, but not quite to the Level 2 recommendation. Ultimately, the ELG decided to not advance the First Hill alternative but requested to address ridership needs for the First Hill neighborhood, in coordination with Madison BRT. ELG members agreed with the SAG's recommendations to advance the 5th/Harrison and 6th/Boren/Roy alternatives, requesting to explore availability of city-owned properties in the Fifth/Mercer alternative.

Agenda Item #7 – Smith Cove, Interbay, Ballard Alternatives, Evaluation Results, Feedback and Recommendations

Cathal Ridge reviewed feedback received during early scoping on the Interbay/Ballard alternatives, highlighting the input to further consider a tunnel or fixed bridge, alternate terminal station locations and request to preserve industrial and maritime operations.

Cathal reviewed some of the evaluation measures considered and shared feedback received at the Neighborhood Forums. He stated that public input included considerations like building stations near 15th Avenue Northwest and 17th Avenue Northwest to facilitate intermodal connections, access between the Smith Cove station and current and future land uses, and to consider effects to traffic on Elliott Avenue West and 15th Avenue Northwest.

Discussion

Q: How much longer is the tunnel in the BNFS/20th/Tunnel alternative compared to other alternatives that involve a tunnel?

A: *The tunnel is slightly longer than the other tunnel alternatives. The BNFS/20th/Tunnel alternative would include an underground station and therefore, be more expensive.*

Q: What's the difference between a fixed bridge and a movable bridge?
A: *The movable bridge was identified in the ST3 Plan as a 70-foot bridge that would open less frequently than the Ballard Bridge does today, which is approximately twice per day. The fixed bridge would need to be approximately 30 to 40 feet higher than the Ballard Bridge. Sound Transit will need to assess how much a fixed bridge is estimated to cost.*

The following comments were provided by ELG members:

- Community support to tunnel across Salmon Bay.
- Support for a station in Interbay that will serve current and future development.
- Support for mixing and matching elements of different alternatives for the preferred project.
- Support for a station at 15th Avenue Northwest.
- Support for alternatives that minimize impacts to the Port.
- Support for removing the BNSF/20th/Tunnel alternative due to anticipated high costs.
- Support for stations with high development potential.
- Consider combination of central Interbay location with tunnel to 15th Avenue Northwest and 17th Avenue Northwest area.
- Concerns about freight impacts if the alignment is on 15th Avenue Northwest.
- Concerns about impacts of a fixed bridge.
- Concerns about impacts to Fishermen's Terminal and maritime activities.
- Concerns about a station at 17th Avenue Northwest based on community input.
- Request for the Port to be a constructive partner as the alternatives development process advances.
- Request for additional information of potential terminus locations.

ELG members agreed with the recommendations put forth by the SAG, with the exception to remove the West of BNSF/20th/Tunnel alternative from moving forward.

Agenda Item #8 – Review Recommendations and Next Steps

David Shelton, HNTB, presented a summary of the ELG recommendations and general discussion for each segment.

Councilmember Rob Johnson highlighted that as the project moves forward to Level 2 alternatives development, it will be helpful for the ELG, SAG and the public to have visual representations of alternatives to understand tradeoffs and to help inform the alternatives analysis.

Councilmember Joe McDermott thanked committee members, Sound Transit staff and Diane Adams for facilitating the meeting. He highlighted that he was impressed with the quality of work achieved by the committee and that ELG members look forward to continuing to work with Sound Transit as the alternatives development process continues.

Diane Adams noted that the recommendations made by the ELG will be shared with the Sound Transit Board at a briefing on May 24, 2018. The next ELG meeting will be held on July 19, 2018.

West Seattle and Ballard Link Extensions
Elected Leadership Group Meeting #3 – July 19, 2018
Meeting Summary

Agenda Item #1 – Welcome and introductions

King County Councilmember and Sound Transit Board Member Joe McDermott welcomed the Elected Leadership Group (ELG) members to the group's third meeting. He noted that the number of Seattle City Councilmembers in the group will make the ELG meeting double as an official city of Seattle Sustainability and Transportation Committee meeting. He highlighted that the project is midway through the alternatives screening process and the Sound Transit Board will identify a preferred alternative in spring 2019. He recognized the amount of work that has been completed thus far and noted that there is more work to be done, screening out options to get closer to identifying a preferred alternative. Looking ahead, ELG members will convene in October to make recommendations on Level 2 alternatives. Recommendations on Level 2 alternatives will be driven by data, analysis and community engagement. McDermott noted the purpose of the third ELG meeting is to discuss new alternatives in Chinatown-International District and SODO and provide recommendations to Sound Transit if the alternatives should carry forward to Level 2 for additional analysis. Lastly, he thanked the project Stakeholder Advisory Group and the community for their engagement in the alternatives development process.

Seattle City Councilmember Mike O'Brien commented that Sound Transit is working with a variety of constituencies to jointly decide how to build mass transit infrastructure to help people get around. He recognized that it can be easy to get lost in the details with large projects but encouraged attendees to not lose sight of the bigger picture and goal. He emphasized that the role of the Elected Leadership Group is to listen to community input and partner agencies, to weigh the strengths and challenges of each alternative and to ensure the project timeline is on track for the Sound Transit Board to identify a preferred alternative by spring 2019.

Peter Rogoff, Sound Transit CEO, welcomed ELG members and thanked the public for attending. He highlighted that the project is entering a process of narrowing down potential alternatives to recommend to the Sound Transit Board, emphasizing that alternatives moving forward should meet community needs and be affordable to design and build. Peter noted that feasibility and cost data for each alternative will be available soon. Sound Transit staff are prepared to brief ELG members as the data becomes available and are working to develop visual renderings for several alternatives to share with members. Joe McDermott thanked Sound Transit for their offer to brief ELG members and encouraged members to meet with Sound Transit at the earliest opportunity.

Seattle City Councilmember Lorena González announced that she has a conflict of interest with several alternatives under consideration for the West Seattle Link Extension, as she owns property in the neighborhood. She noted that she will excuse herself during public comment and when the ELG discusses the West Seattle/Duwamish segment.

Agency directors, project leads and staff in attendance were:

- Peter Rogoff, Sound Transit CEO
- Cathal Ridge, Sound Transit

- Ron Endlich, Sound Transit
- Leda Chahim, Sound Transit
- Diane Adams, Facilitator

ELG members in attendance were:

- Mayor Jenny Durkan, Sound Transit Board Member
- Executive Dow Constantine, Sound Transit Board Member
- Councilmember Rob Johnson, Sound Transit Board Member
- Councilmember Joe McDermott, Sound Transit Board Member
- Councilmember Sally Bagshaw, Seattle City Council
- Councilmember Mike O'Brien, Seattle City Council
- Councilmember Lorena González, Seattle City Council
- Commissioner Stephanie Bowman, Port of Seattle (phone)

NOTE – the following members were not in attendance:

- Executive Dave Somers, Sound Transit Board Chair
- Councilmember Lisa Herbold, Seattle City Council
- Councilmember Bruce Harrell, Seattle City Council

Agenda Item #2 – Public comment

Councilmember Mike O'Brien, Seattle City Council, led the public comment period and noted that commenters would be allowed two minutes to speak. The Seattle Channel recorded and posted the meeting online to ensure visibility and documentation of the meeting.

Members of the public provided the following comments:

- One attendee, on behalf of Stand Up America, noted their concerns with collusion between agencies and government. They shared concerns about the feasibility of large transit infrastructure projects that do not serve tax-payers who help fund the projects.
- One attendee shared concerns and frustrations that Sound Transit is unwilling to meet and discuss issues with citizens and vocalized that citizens ought to have the right to address the government without fear of retaliation, discrimination or racism.
- One attendee expressed concerns about the feasibility of the West Seattle and Ballard Link Extensions, noting that tax payers will end up paying large sums of money to build and operate trains.
- One attendee, on behalf of south Downtown, requested Sound Transit consider coordinating project timelines between the West Seattle and Ballard Link Extensions project in the Chinatown-International District and the replacement of the 4th Avenue Viaduct.
- One attendee, shared their preference for the 4th Avenue S alternative in the Chinatown-International District because it would present an opportunity to re-activate Union Station and make it a multi-modal hub. They also noted that the 4th Avenue S alternative presents fewer

business impacts than other alternatives under consideration and is critical to consider because many businesses along 5th Avenue S are owned by people of color.

Agenda Item #3 – Community Engagement and Collaboration

Diane Adams, facilitator, stated the purpose of the meeting is for Sound Transit to present project updates to the Elected Leadership Group and receive direction on whether to advance additional Level 1 alternatives in Chinatown-International District and SODO.

Cathal Ridge, Sound Transit, discussed the community engagement and collaboration process for the West Seattle and Ballard Link Extensions project. He noted that early scoping informed the alternatives considered in Level 1, followed by community input received at neighborhood workshops, and multiple Stakeholder Advisory Group and Elected Leadership Group meetings. The Sound Transit Board received an overview of the alternatives to move forward for further analysis in Level 2 in May 2018. Since then, additional alternatives in the Chinatown-International District and SODO were recommended for further analysis. Cathal highlighted that Sound Transit has started to conduct interviews with social service providers in the project corridor, are continuing to brief organizations and are reaching the community through fairs and festivals during the summer. Sound Transit will hold neighborhood forums in September 2018 to share Level 2 alternatives with the public for feedback.

Agenda Item #4: Level 2 Alternatives

Cathal Ridge provided a brief description of the Level 1 alternatives under consideration and the refinements made to alternatives due to feedback received from the public and advisory groups in May 2018.

West Seattle alternative refinements:

- Pigeon Ridge/West Seattle Tunnel: Avalon station shifted to straddle Fauntleroy Way SW
- Oregon Street/Alaska Junction/Elevated: Route shifted south of West Seattle Bridge crossing; continues from Oregon Street to 44th Avenue SW in an elevated configuration
- Oregon Street/Alaska Junction/Tunnel: A new alternative that includes the Avalon station straddling Fauntleroy Way SW and continues into a tunnel at 38th Avenue SW to Alaska Junction
- Golf Course/Alaska Junction/Tunnel: Delridge station shifted south; route shifted to north edge of West Seattle Golf Course to avoid major Section 4(f) impacts; Avalon station straddling Fauntleroy Way SW

SODO/Chinatown-International District alternative refinements:

- Massachusetts Tunnel Portal: Added new Lander Street roadway overcrossing and at-grade SODO station
- Additional feedback is to consider 4th Avenue location for Chinatown-International District station and to explore routes further west of the ST3 Representative Project in SODO

Downtown alternative refinements:

- ST3 Representative Project: South Lake Union station shifted to avoid conflict with SR 99

- 5th/Harrison: South Lake Union shifted to avoid conflict with SR 99; Denny station shifted to expand walkshed
- 6th/Boren/Roy: South Lake Union station shifted to avoid conflict with SR 99 and sewer
- 5th/Terry/Roy/Mercer: Denny station shifted to Terry Avenue N; South Lake Union station shifted to avoid sewer and traffic conflicts on Mercer; Seattle Center station shifted to a more central location on Mercer Street; north end of route (tunnel portal) shifted off park property

Ballard alternative refinements:

- ST3 Representative Project: Route shifted farther from existing Ballard Bridge
- 15th/Fixed Bridge/15th: Smith Cove station and guideway shifted out of roadway; shifted guideway out of roadway and re-oriented Ballard station
- 20th/Fixed Bridge/17th: Shifted Interbay station to straddle W Dravus Street
- 20th/Tunnel/15th: Shifted Interbay station to straddle W Dravus Street
- Central Interbay/Movable Bridge/14th: Smith Cove station shifted south to Galer Street; shifted Ballard station to straddle NW Market Street
- Amory Way/Tunnel/14th: Shifted Ballard station to straddle NW Market Street
- Central Interbay/Fixed Bridge/14th: Fixed bridge crossing; Ballard station straddling NW Market Street
- Central Interbay/Tunnel/15th: Combined central Interbay location with tunnel to 15th/17th area

Cathal noted that elements of the various alternatives could be mixed-and-matched and encouraged members to consider this as the alternatives development process continues.

Agenda Item #5 – SODO Alternatives and Evaluation Results

Ron Endlich, Sound Transit, noted that there was interest and requests to evaluate new alternatives in SODO. Sound Transit, City of Seattle, Washington State Department of Transportation and King County Metro participated in workshops in June and July to identify potential refinements to the routes under consideration, with community engagement on the topic occurring in parallel.

Ron noted that the desires expressed were to serve additional ridership markets in the 1st Avenue S corridor, to ensure a high-quality transfer at SODO Station, ensure good freight mobility in the area and consider ways to improve safety at stations.

Ron noted the operational needs are to provide a connection to the maintenance facility, connect the lines to the Downtown Seattle Transit Tunnel, provide an interim terminus for the West Seattle Extension before the Ballard Extension comes online and provide a track connections between the lines. He described the importance of providing a connection to the Link maintenance facility for future trains that serve West Seattle. In addition, he noted that the SODO station will be a temporary transfer point between the West Seattle Extension and the rest of the system until the Ballard Extension comes online. He also noted the need to have track connections between the lines in case of emergency or long-term maintenance needs.

Sound Transit explored a number of potential alignments in SODO and further advanced two new alternatives to address the community desires and the operational needs of the extensions. The two new alternatives in the SODO segment were as follows:

1. Occidental Avenue: Elevated line that ties into existing system, south of the Stadium area.
    - Key findings include:
        - Property impacts and long-span crossing over BNSF tracks
        - Traffic and freight access impacts
        - No track connections between extension lines
        - Long track connection to the maintenance facility

2. 6th Avenue: Elevated line east of E-3 transitway that ties into the E-3 transitway near the Stadium area
    - Key findings include:
        - Traffic and freight access impacts on 6th Avenue S due to construction of the elevated guideway
        - Connection to maintenance facility is technically challenging
        - Property impacts to locate the SODO station adjacent to the existing SODO Station
        - Construction challenges and service disruptions

Other suggestions

The agency workshops also raised other suggestions to help serve the SODO area. Those suggestions included:

1. Track interlining: The West Seattle Extension would tie into the existing Central Link line, using a single set of tracks through SODO.
    a. Challenges include potential bottleneck of trains, reduces long-term service capacity and requires the construction of two individual grade-separated tracks to tie West Seattle to the existing Central Link line.
2. Extended Ballard line: Trains would move through a longer tunnel, become elevated along the 1st Avenue S corridor and tie into the existing line near the maintenance facility at Forest Street.
    a. Challenges include major service disruption to build the E-3 track connection for the West Seattle Extension, replacing the existing elevated Forest Street structure, no track connections between lines and the International-District station would be deep mined, up to 200 feet in an area with bad soil conditions that is challenging to mine a station.

Track interlining and extending the Ballard line suggestions were considered as non-practical for the reasons listed above and were not moved forward for further consideration.

E-3 Transitway

The E-3 transitway currently serves 60 buses in the PM peak hour but many of the existing routes that use the transitway today will be intercepted or discontinue service once new light rail extensions come online in the future. Sound Transit is continuing to look at opportunities to improve integration of local bus service, improve pedestrian and bicycle connections and safety at station locations. Ron explained the complexity of adding new Link light rail lines in the E-3 transitway and discussions with partner agencies will continue throughout the process.

Ron briefly described a summary of the SODO alternatives and noted that the Stakeholder Advisory Group identified the Occidental Avenue alternative to move forward into Level 2.

Discussion

The following questions were asked by ELG members:

Q: What are the current zoning plans in the 1st Avenue corridor in SODO?
C: There are no current or future zoning changes proposed in the SODO area.

Q: What is the need to build an additional maintenance facility track connection?
A: Sound Transit would like to build in the flexibility to assign trains northbound and southbound from the Forest Street maintenance facility. The challenge is the amount of operating trains at one time, using central Link lines and tracks. Without a direct track connection to the West Seattle line, sending a train northbound and reversing direction to head southbound on live tracks would worsen operating headways and could limit Sound Transit's ability to deploy the early morning fleet to Ballard.

Q: How did new alternatives to study get added to the list of potential alternatives in SODO? There was clear direction from ELG members to Sound Transit staff about what to study in SODO in Level 2 since the last ELG meeting.
A: ELG members asked Sound Transit to look at alternatives west of the E-3 transitway corridor. Sound Transit sought input from partner agencies to help identify alternatives. Many new alternatives were discussed and Sound Transit advanced the two most promising alternatives for further analysis.

C: The list of alternatives is growing when the list should be narrowed down.

Q: Can Sound Transit expand on some of the challenges, such as service disruption, for the option considered to extend the Ballard line?
A: Consultant staff did some early analysis for extending the Ballard line. The initial concept includes the assumption that if the West Seattle Extension is operational before Ballard Extension, there are two points of disruption at Forest Street due to the current Link line from Beacon Hill travels on an elevated guideway, curves and comes into SODO at-grade. To tie West Seattle into the current configuration, Sound Transit would need to build two additional ramps to tie into the existing structure and to the Ballard Extension. The existing ramps would need to be demolished and a new structure would have to be built that crosses the E-3 transitway. The initial estimate is that it would take several months of service disruption to build the new ramps required for both extensions to be operational.

Q: Has analysis been conducted on the E-3 transitway, evaluating the gap of time between construction of new light rail tracks and when service of new extensions would start?
A: King County Metro has a long-range bus plan that forecasts transit volumes between 2025 and 2042. Construction of the new light rail line is projected to begin in 2025. There would be a substantial reduction in buses coming to Seattle as new light rail lines come online and are extended, decreasing the volume of buses along the E-3 transitway. The assumption is that buses will be intercepted at suburban rail station locations to bring riders to light rail stations to get into Downtown Seattle, rather than making the entire trip by bus. Sound Transit will continue to work with King County Metro to understand the potential impacts to the E-3 transitway.

Q: Has analysis been conducted on the Seattle City Light transmission lines that run under the E-3 transitway?
A: Yes, Sound Transit is in discussion with Seattle City Light about the potential to relocate the transmission lines. Sound Transit has identified that some portion of the lines will need to be relocated and have identified potential relocation routing options for the lines with preliminary feedback from City Light staff.

Q: What is the projected cost and impact to buses and Seattle City Light due to the construction of new extensions?
A: Sound Transit will be able to identify some cost estimates for components of major work and estimates will be refined as the project moves forward and undergoes additional analysis.

Q: Which alternatives avoid a forced transfer from West Seattle to the SODO station?
A: Sound Transit is evaluating alternatives for SODO to be the interim terminus point of the line. Other options under analysis are to connect the West Seattle line to the existing Chinatown-International District Station.

Q: What analysis has been conducted to shift the Chinatown-International District station north of 4th and 5th Avenues?
A: The Chinatown-International District station would need to be located north of 4th and 5th avenues if the extended Ballard line concept was to move forward. The station would need to be very deep because of the soil conditions and deep piles in the area. There would not be a good connection between the new station and the existing International District Station.

The following comments were provided by ELG members:

- Support for a station west of the ST3 Representative Alignment in SODO
- Concern about potential impacts to Seattle City Light transmission lines and E-3 transitway
- Concern about a forced transfer for five years between extensions
- Concerns about a station location west of BNSF tracks

ELG members agreed with the SAG's recommendations to advance the Occidental Avenue alterative for further analysis in Level 2.

Agenda Item #6 – Chinatown-ID Alternatives and Evaluation Results

Ron Endlich, Sound Transit, noted that there was interest and requests to evaluate new alternatives along 4th Avenue and to explore alignments further west of the ST3 Representative Project in Chinatown-International District. Sound Transit, City of Seattle, Washington State Department of Transportation and King County Metro participated in workshops in June and July to identify potential refinements to the routes under consideration.

Ron noted that the community desires were to improve intermodal connections, activate Union Station and minimize construction impacts in Chinatown-International District. Feedback received from the agency workshops included: desire for a safer connection to King Street Station, avoid impacts to affordable housing, fire station, emergency operations center, traffic impacts of construction on 4th

Avenue and trolley bus access. Agencies also noted an opportunity to partner on a 4th Avenue Viaduct rebuild.

Ron presented the different types of underground stations and mining techniques required for various alternatives.

Cut-and-cover station construction:
- Examples of cut-and-cover stations: Pioneer Square and University Street stations
- 4.5-year construction timeline for a typical station
- Temporary roadway deck is installed as the "Cover" that helps minimize surface disruption during construction
- 1.5-year surface level disruption timeline; generally, at beginning and end of construction timeline

Open cut station:
- Examples of open cut stations: U-District and Roosevelt stations
- In the examples, the station location was not in the roadway and a deck (i.e. cover) was not needed
- Construction is generally faster and more cost effective

Mined station
- Example of mined station: Beacon Hill (~160 ft. deep)
- Requires excavation of a large construction shaft to access the platform level of the station to begin mining

The technical challenges with constructing a new station in Chinatown-International District is the limited right of way space, poor soil conditions, deep piles under 4th Avenue, Union Station, existing International-District Station and conflicts with the existing Downtown Seattle Transit Tunnel (DSTT) structures.

Sound Transit developed five new alternatives to address the community concerns and the construction constraints in Chinatown-International District.
1. 4th Avenue S: Cut-and-cover tunnel and station
    - Key findings include:
        - Constructability challenges
        - Requires replacement of 4th Avenue Viaduct
        - Requires additional cut-and-cover under I-90 ramps
        - Potential business displacement
        - Potential service disruption during construction over existing tunnel (DSTT)
        - High volume of traffic diverted from 4th Avenue to neighborhood streets (vehicle volumes on 4th Avenue are almost four times greater than 5th Avenue)
        - 4.5-5.5 years of construction over four phases
2. 4th Avenue S: Bored tunnel/mined station
    - Key findings include:
        - Constructability challenges
        - Required deep station construction

- Requires replacement of 4th Avenue Viaduct
- Requires additional cut-and-cover under I-90 ramps
- High volume of traffic diverted from 4th Avenue to neighborhood streets (vehicle volumes on 4th Avenue are almost four times greater than 5th Avenue)
- 5-6 years of construction over two phases

3. 5th Avenue Bored tunnel/cut-and-cover station
   - Key findings include:
     - Reduces extent of cut-and-cover construction impacts
4. 5th Avenue Bored tunnel/mined station
   - Key findings include:
     - Reduces extent of cut-and-cover construction impacts
     - Deep mined station construction technically challenging
5. Union Station: Bored tunnel/mined station
   - Key findings include:
     - Constructability challenges
     - Requires tunneling under I-90 ramps
     - Requires a very deep station due to pile depths
     - Difficult to build shallow tunnels due to existing obstructions in the area
     - Lacks construction staging and access shaft sites

Ron briefly described a summary of the Chinatown-International District alternatives and noted that the Stakeholder Advisory Group identified the following alternatives to move forward into Level 2:

- 5th Avenue cut-and-cover tunnel and station (ST3 Representative Project)
- 5th Avenue bored tunnel/cut-and-cover station
- 5th Avenue bored tunnel/mined station
- 4th Avenue cut-and-cover tunnel and station
- 4th Avenue bored tunnel/mined station

Discussion

The following questions were asked by ELG members:

Q: What is the reasoning for an extended construction timeline of 4 years of surface and traffic disruptions for the 4th Avenue cut-and-cover station, when most cut-and-cover stations have construction timelines of 1.5 years for surface disruption?
A: The 4th Avenue Viaduct will need to be torn down and rebuilt first before station construction begins.

The following comments were provided by ELG members:

- Support to explore more 4th Avenue options
- Request for more information on the Chinatown-International District alternatives to make more informed decisions about which alternatives should move forward
- Important to continue considering numerous options in Chinatown-International District because it is one of the neighborhoods along the route with the fewest alternatives
- Important to consider the potential impacts of the staging equipment area in Chinatown-International District

ELG members agreed with the SAG's recommendations to advance the 5th Avenue cut-and-cover tunnel and station (ST3 Representative Project), 5th Avenue bored tunnel/cut-and-cover station, 5th Avenue bored tunnel/mined station, 4th Avenue cut-and-cover tunnel and station and the 4th Avenue bored tunnel/mined station alternatives for further analysis in Level 2.

Agenda Item #7 – Equity Inclusion Briefing

Leda Chahim, Sound Transit, and Jennifer Chao, Seattle Department of Neighborhoods, presented on the equity and inclusion process for the West Seattle and Ballard Link Extensions project.

Leda noted the commitment to early engagement with the public, specifically in under-represented communities. Sound Transit strives to enhance collaboration and increase transparency with communities along the project alignment and enhance access to the light rail system. During environmental review, Sound Transit conducts an environmental justice analysis that evaluates demographics, benefits and impacts to communities of color and documents efforts to involve people of color and people who are experiencing low-incomes.

Sound Transit has a partnering agreement with the City of Seattle, which provides a framework for the two agencies to work closely together during the alternatives development phase of the project to identify a preferred alternative, as well as other alternatives to study in the Environmental Impact Statement.

Mayor Durkan administered an Executive Order affirming the City's commitment to the Race and Social Justice Initiative (RSJI). The City of Seattle requires major capital projects to create a Racial Equity Toolkit (RET), as an assessment tool to address project impacts on racial equity. Sound Transit and the City of Seattle work in collaboration to develop the RET, which is data-driven and inclusive in nature.

Leda presented the data findings from Level 1 alternatives analysis, which included mapping concentration of communities of color along the project corridor. The RET analysis key findings included:

- Chinatown-International District station area is the only area densely populated by communities of color in the project corridor
- Densely populated communities of color lie within the bike and transit sheds of the Delridge and Avalon stations but are outside of those stations' immediate walksheds
- Most stations are located in areas identified as "high opportunity" in terms of access to opportunities for financial and/or social advancement
- Correlations were identified between race and class, where communities of color tend to have lower incomes and access to opportunity than majority white communities

The RET has informed community engagement thus far by:

- Establishing shared outcomes
- Collaborating on alternatives development with community leaders in the Chinatown-International District
- Conducting social service provider interviews centering race
- Providing modifications to the criteria used to screen alternatives
- Adding a station area workshop focused on the Delridge station

During Level 2 alternatives development, Sound Transit and the City of Seattle strive to continue collaboration to elevate issues and considerations to better inform the alternatives development process, provide information that data alone cannot provide, and share findings of Level 2 data analysis and community engagement.

Discussion

Q: Are there additional criteria being added or are criteria modified?
A: Sound Transit and the City of Seattle are evaluating what other criteria can be useful to measure.

Q: Thank you for making equity and inclusion an integral part of the project. What is being done to ensure that Sound Transit and the City are reaching communities where English may not be the primary language spoken and to communities who may not engage in traditional public involvement?
A: The City of Seattle has a community liaison program that is comprised of individuals who speak multiple languages. Liaisons attend meetings and meet people where they currently gather in different communities to help communicate project information.

C: Thank you for the work you've done so far. We're grateful to have you as part of this team. Thank you to Mayor Durkan for committing the City of Seattle to this important work.

C: Thank you Sound Transit for committing to incorporate this level of equity and inclusion into your work. The project will significantly change the City's mobility and it's critical to think about how to make the system equitable.

C: I encourage Sound Transit to share results with the communities they're engaging with. Oftentimes, we hear from the community, "You didn't listen to us." Sound Transit has the opportunity to demonstrate that they heard the community and how their input informed decisions.

Agenda Item #8 – Next Steps

Diane Adams, facilitator, noted that the technical team will begin additional analysis for alternatives approved to move forward into Level 2. Cost estimates and visualizations are anticipated to be available before the next ELG meeting.

Councilmember Joe McDermott provided closing remarks, encouraging members that as data becomes available to proactively meet with Sound Transit staff for a briefing, prior to the next ELG meeting. The next Elected Leadership Group meeting will be held on Oct. 5, 2018 where members will recommend which alternatives move forward into Level 3.